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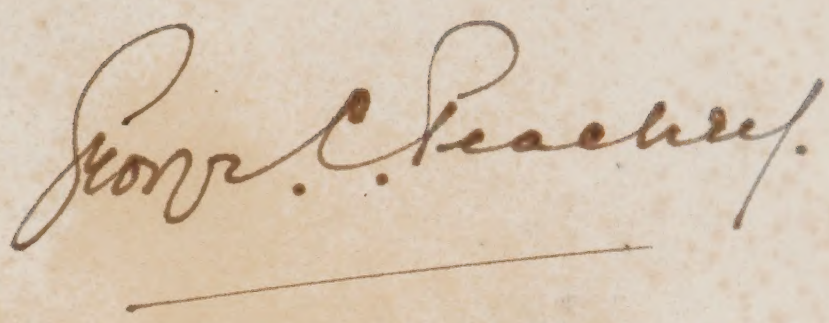

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# HISTORY

OF

# MEDICINE,

FROM ITS

## ORIGIN TO THE NINETEENTH CENTURY,

WITH AN APPENDIX, CONTAINING A PHILOSOPHICAL AND HISTORICAL REVIEW OF MEDICINE TO THE PRESENT TIME,

BY P. V. RENOUARD, M. D.

The Sciences are gradually developed. It is only by reviewing past centuries that we can determine their laws of growth.

TRANSLATED FROM THE FRENCH BY

CORNELIUS G. COMEGYS, M. D.,
PROFESSOR OF THE INSTITUTES OF MEDICINE, MIAMI MEDICAL COLLEGE.

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OF

MY FATHER,

CORNELIUS P. COMEGYS,

LATE GOVERNOR OF DELAWARE,

AND

MY PRECEPTOR,

WILLIAM E. HORNER, M. D.,

LATE PROF. OF ANATOMY IN THE UNIVERSITY OF PENNSYLVANIA,

THE LABORS OF

THE TRANSLATOR

ARE AFFECTIONATELY AND

GRATEFULLY INSCRIBED.

# TRANSLATOR'S PREFACE.

In producing the work of Dr. Renouard in the English language, I have been actuated by the conviction that a treatise of its nature is greatly needed. Indeed, if I except brief sketches affixed to some of our special treatises, we possess nothing in our literature that is at all calculated to satisfy the wants of the profession in this respect. The only work on this subject, of any magnitude, by an English author, is that of Dr. Freind, which is a continuation of Le Clerc, and comes down only to the beginning of the sixteenth century; besides, it is out of print.

Why no history of Medicine commensurate with the dignity and extent of our profession has yet been written in our tongue, I am entirely unable to explain. Other languages are prolific enough in this respect, particularly the German and the French. To obtain any scholarly attainments on this subject, it has been necessary to read books in foreign languages. Knowing, therefore, the wants of the profession, and having been greatly encouraged by medical gentlemen in different portions of the Union, to whom I have communicated my design, I have ventured to offer this translation to fill this vacuum in our medical literature. I have hesitated to enter into this very difficult field of authorship, from a real distrust of my abilities for the task; and now that it is done, many errors are plainly visible. Some are minor ones, and are such as will creep into publications in spite of the utmost care. There are others, more serious, which I would gladly correct, and hope to have an opportunity of doing so at another time. Few of them, however, impair in any great degree the original, and do not, therefore, materially pervert the author's meaning. My professional brethren will

be kind in their criticism, when they remember that the active duties of our profession are most unpropitious to literary pursuits.

The work of Dr. Renouard should be studied in several aspects; first, as a historical narrative, in which the relation of Medicine to civilization is shown, and its progress compared with that of the sciences and arts; secondly, in the history of its cultivators, with the theories and systems which they have proposed; thirdly, the relation of medical to philosophical theories; lastly, the great argument of the author: Empiricism or the Empirical method is alone applicable to the cultivation of Medicine; and therapeutics, not physio-pathology, the foundation upon which the science rests.

In these respects the author has acquitted himself as fully as the limits of an elementary treatise will allow, and particularly in his discussion of philosophic methods and on the general subject of metaphysics he has presented one of the clearest, most comprehensive, yet condensed expositions that any single work affords, and it will thoroughly prepare the reader to appreciate properly his main argument.

Many eminent minds in our profession are steadily at work endeavoring to build up Medicine, like other branches of natural science, by the careful study of facts. We have millions of well attested observations, and if our reason is invoked, in the language of Kant, only to guide experience in the careful study and co-ordination of these facts, we shall be able by induction to reach those great general principles or axioms that shall give our science a lofty rank among kindred sciences for completeness and certainty. I humbly think that the work of Dr. Renouard will greatly aid in this conquest, by turning the mass of medical mind from the vain efforts of speculation to the tried and fruitful path of observation. But this is a laborious route, and its difficulties were early expressed by Hippocrates, in his well known Aphorism: *life is short, art is long, experience deceptive, judgment difficult.*

The uncertainty of Medicine, and the different opinions of those who cultivate it, are often referred to as an evidence of its low rank as a science; yet I believe that, excepting mathematics and pursuits resting strictly upon it, no pursuit of man surpasses or equals Medicine in the certainty of its opinions, and in its positive and increasing blessings to society. We do not assume that Medicine, as a science or an art, is

now perfect; on the contrary, none feel its defects more keenly than medical men; yet we know that a steady and brilliant improvement is in progress.

When we examine other professions, it is very plainly seen that there is as much uncertainty and want of uniformity in opinions as in ours.

In theology, learned bodies are divided, not in regard to speculations about mysteries more than in the meaning of words and the interpretation of phrases, access being had by all parties to the same sources of knowledge, to enable them to settle these questions. These varieties are seen in confessions of faith, administration of ordinances, and church government.

The law is said to be the perfection of human reason; but if Medicine is proverbially uncertain, what may not be said of law? Its doctrines are written, its decisions are voluminous, and moreover, the whole science may be narrowed down to a question of right and wrong, in which the whole moral faculties of man instinctively lead the judge to decide aright. In nothing have men more intuitive knowledge than in law. It may be said that legal decisions are uncertain, because evidence is defective. This is granted, but its uncertainty is seen as frequently in interpretations of organic as of common law. The opinions of lawyers are given with great deliberation, with ample opportunity for research, while doctors are expected to be ready at a moment's warning to decide the most momentous questions; and I have no hesitation in saying that the opinions of medical men, thus given on the spur of the moment, are characterized by as much certainty as those of lawyers.

Let us compare Medicine with political economy. Are our statesmen unanimous in their views on the subjects of domestic manufacturing, tariffs, banks of issue, internal improvements, educational systems, modes of taxation, currency, the general rights of citizens, and on other highly important topics?

The movements of the mercantile and manufacturing world rest upon calculations or estimates, but of all pursuits none are so uncertain. A very small number of men who embark in commerce and manufacturing succeed. These noble occupations, which are most important elements in the progress of civilization, offer but little hope of permanent success.

Uncertainty marks also the estimates of engineers and architects, although it would seem that ample data are in their possession to give great precision to their statements.

Navigation, so far as it relates to mathematics, is remarkably accurate. The ship is guided from port to port, and throughout her voyage her exact position on the surface of the ocean can be defined. These calculations are founded on the movements of the heavenly bodies; but the opinions of the captain in regard to the weather, and the duration of his voyage, are all uncertain. When he encounters the commotions of nature, the fierce tempest, and the surging ocean, he has no more certainty of saving his ship and crew, than the physician who struggles with the conflicts of nature in the human organism.

My brief space will not allow me to say more on this topic, but these examples will contribute somewhat, I trust, to wipe off the stigma of the greater uncertainty in Medicine than in other pursuits.

Our science is also reproached with being stationary. Thus it is said that while society has been flooded with light on other topics, and civilization has improved steadily, Medicine has contributed an inferior share to this progress. Nothing can be more unfounded than these statements. If we examine the great eras in civilization, Medicine will be found to have progressed as rapidly as the physical sciences generally. The discoveries of Columbus, and successive navigators, were not earlier nor more important in geography, than those of Mondini, Beranger, Vesalius, and Sylvius, in anatomy. Copernicus did not earlier conceive the errors of the Ptolemaic astronomy, than Servetus, R. Columbus, and Cesalpine the errors of Galenic physiology; and Galileo, who demonstrated the movements of the earth and planets around the sun, was a cotemporary with Harvey, who demonstrated the circulation of the blood. The universal law of Newton for the solar system, was not greatly in advance of that of Haller of the laws and special forces of life. If the great philosopher established that the force manifested in the fall of an apple to earth, is the same as that which keeps the planets in their orbits, so the pathologist has shown that the laws of inflammation in the deep-seated and vital organs are identical with those that are seen in the smallest inflammatory point on the skin. And how much might be added on the application of physical laws in diagnosis, the prevention

of small pox, the easy cure of autumnal fever, etc., to show that in point of progress Medicine marches hand in hand with kindred sciences.

Literature and the fine arts offer no comparison in this respect to Medicine. Our oratory does not surpass that of Greece and Rome. Where have we profounder reflective philosophers than Pythagoras and Plato of the ancients, and Locke and Descartes of moderns? What astronomers are adding anything to the laws developed by Newton, Kepler, and La Place? In sculpture we only equal ancient Greece. Our paintings are not esteemed like those of the old masters. Our jurists do not surpass the Erskines and Blackstones. "Except the writings of Lord Mansfield on commercial law," says a late writer, "nothing important has been added for many years, and no great errors have been expunged." In statesmanship, the present generation will scarcely rival the past. Who shall fill the senatorial chairs of Clay, Calhoun, Wright, and Webster? The present commentators on the Bible are not superior to those who have passed away; our writers on moral science are largely copyists of old authors; our poets and prose writers do not surpass our classics. There is no progress in mathematics; the most eminent intellects are only able to master the inventions of Euclid, Newton, and Leibnitz.

In what, then, is the progress of this stirring age? It is not in theology, law, belles-letters, the fine arts, architecture, politics, mathematics, or metaphysics. It is in mechanics and the chemical and physical sciences, in which our science forms an integral part. Man is struggling to regain what was his primeval inheritance "before the fall brought ruin on our race," when God said, showing him animate and inanimate nature, "have dominion." We see this in his control of the electrical element, which enables him to imitate the ubiquity of God; in employing the winds to waft his graceful ships; in the ocean steamer, which drives its prow in the teeth of the powerful north-wester, and beats down the waves that vainly dispute its passage; in the tunneled mountain, whose icy peaks are reared in vain to barricade the route of his locomotive; in employing the sun's rays to stamp his features on the metalic plate, that the perfect image of his loved ones may remain long after their frames have mouldered into dust.

Medicine relates to nature, its preservation and defence, and nothing that man possesses surpasses it in ameliorating the condition of the race. Our progress is not only in the structural knowledge of the system, and its life laws, but our resources for the treatment of diseases are enlarged. The horror of surgical operations is abated by the fact that the severest work of the knife may now be endured while the mind is as blissful as if wandering in Elysian fields.

But I must not deal in words only. We have undisputed figures to prove that our science is a vast blessing to the race. I will not allude to individual cases, to which every one can bear some testimony of its success, but take the broad results of vital statistics.

The epidemics that formerly terrified the nations, leaving in their trail desolations worse than the tornado, have been shorn of their terrors. The prevalence of small pox has been almost prevented by Jenner's discovery of vaccination. The treatment of cholera is now so well understood that it has lost its former desolating power. Human life has been greatly lengthened in the last hundred years. The reports of the Parisian hospitals show that while in 1805 one died in seven who were admitted, now only one dies in twelve, thus showing that our science has increased in its ability to save life in the same order of diseases, and in the same buildings, seventy-one per cent in a period of fifty years. In other words, in the Paris hospitals, where, formerly, fourteen men died in each hundred admitted, now only eight die, a saving of six persons in a hundred; and in the eighty thousand who annually pass through those wards, a saving of five hundred human beings. And this is not all; the period of their stay is very much lessened. The average time of residence was formerly thirty-nine days, now it is twenty-four days, a a difference of fifteen days since 1805. In the treatment of special diseases, the most remarkable evidences of improvement are shown. Thus, in syphilis, in 1805, one died in fifty-six cases; now (1850) only one died in two hundred and ninety-four.

In England, according to Macaulay, "the term of human life has been greatly lengthened in the whole kingdom. In 1685, not a sickly year, one in twenty of the inhabitants of London died, while at present only one in forty dies. The difference between London in the

seventeenth and London in the nineteenth century is as great as between London in ordinary years and London in the cholera."

In surgical practice, the saving of life at present exceeds by more than thirty-five per cent. the results at the beginning of this century. The returns of the Registrar General of England show a steady and notable decrease in the rate of mortality from 1838 (the beginning of the returns) to 1845; in 1846 it rose again, ascribable to the prevalence of epidemic intestinal diseases. In France, according to Dapin, the duration of life has been increasing, equal to fifty-two days for each year from 1776 to 1842, or nine and a half years for the whole period. The increase per annum was at no time less than nineteen days, although that revolutionary and warlike nation shed seas of blood, not only in her cities, but upon every battle field in Europe. In midwifery practice, one hundred and fifty years ago, according to Dr. Merriman, one in forty died. At the close of his tables, (1828,) only one in one hundred and seven died, and at this time perhaps not one in two hundred and fifty dies. The hospital practice in our own country exhibits the same gratifying success in treatment. I find by comparing the statistics of the Philadelphia and New York hospitals, that they show the same results, almost to a fraction, with those of Paris. In short, whether we examine the reports of the Registrar General of England, the data of the Carlisle and Northampton life tables, the statistics of the Bureau Centrale of Paris, or the publications of the great hospitals of our own country, the same results are presented. Life has been prolonged more than twenty-five per cent. in the past seventy-five years, and the duration of treatment lessened more than one-third. Now, it may be said that the cessation of wars, and the amelioration of the general condition of the masses, explain this gain in human life, and deprive Medicine of her claim to such titles of glory. But we present these irrefutable hospital reports; their wards are the peculiar battle-ground of the doctors, and showing these results, we demand that they shall be exponents of what has been done for society at large—that this increased longevity is due to our science.

Who supposes its power to benefit mankind can not be immensely augmented? Who is content that it should be stationary? Certainly not medical men. Its higher success is the dream of their lives; they

gaze into a hopeful future, and are filled with glowing and bright pictures of the era when this science shall be

> "Above the reach of sacrilegious hands,
> Whose honors with increase of ages grow,
> As streams roll down, enlarging as they flow."

Another important fact is well established by the perusal of this history, viz: that Medicine has never flourished and been cultivated in the highest degree in any country where it has had no legal recognition. The want of such recognition and legislation is painfully felt in most of the States of our Union. The medical profession is wholly unprotected except by its own organization, by its own regulations; it attempts to encourage a sound state of education and ethics, yet we are assailed continually for what are termed our prejudices against irregular practitioners.

The whole series of phenomena in the human system is in accordance with the laws of vitality, precisely as the endless phenomena of the universe are developed in obedience to certain laws. When, therefore, the human mechanism becomes deranged, and a great contest is set up between the forces of disease and the vital forces, who shall attempt to interfere—the man who has made these laws a study, who knows the operations of their final causes, who comprehends as far as science has shed light upon the subject, their special and general operations, or the man who is ignorant of the entire mechanism, and laying aside all such labor and investigation, attempts to rescue the suffering system by remedies which, according to his gross views, have been successful in a similar case? Legislation offers no obstacle to the latter. It is true that it has legalized the medical college and its diploma, but the learned and laborious graduate has no legal level above the quack; the latter has just as full authority to practice. If any one, deceived by the puffing of the self-styled doctors, falls a victim to their ignorance, the law kindly allows a prosecution for mal-practice! An irreparable injury, or even death itself may be the result of this ignorant interference, and what atonement then does the prosecution of an irresponsible man afford?

In regard to Medicine, every one must look out for himself. With

the same indifference, we ought not to have a standard of weights and measures, nor a fixed value of coin, nor protection against issues of paper money. Let every one take care of himself. Why not have a board of examiners of candidates for medical practice, as we have for law and teaching? No man can assume to be a respectable minister of the gospel without the license of a church organization; no man can practice law without an approved examination before a court; no man can teach without a certificate of qualifications; no man can sell goods or peddle goods, or drive a dray, or a cab, or an express wagon, without registering and a license. The public is defended from the impositions of the hackney coachman, but not from the quack doctor and patent medicine vender. No man is believed te be a carpenter, or a machinist, or a master in any other profession, unless he has served an apprenticeship to it. Then why, I ask, in the name of humanity and civilization, when we come to consider the human frame, the most wonderful structure of God, the divine idea of mechanism, in whose structure a thousand wonderful and complicated actions are in play, many of whose laws, after more than two thousand years of investigation, are still unknown, why, I say, do our governments surrender this beautiful structure to be prostituted to the mercenary practices of charlatans?

When we think what interest Deity has taken in diseased humanity, inspiring Moses to write those extraordinary precepts found in Deuteronomy, how he conferred on priest and prophet healing powers; that Jesus performed the functions of a physician as well as that of a divine teacher, and endowed his apostles with power to heal the sick, thus sanctioning the profession of Medicine, as well as giving proofs of a divine nature; that the ancient civilization of Greece and Rome legalized Medicine, and all modern Europe lavishes upon it favors and protects it from impostors; why, I repeat, in this great Republic, is this learned and valuable profession unsustained, and society unprotected?

The profession must appeal to legislation, not to ask for laws that shall compel a man to profess the doctrines of a certain school, but that no one shall be allowed to treat diseases, whether he calls himself allopath, homeopath, isopath, physiopath, eclectic, botanic, or by any other name, until he has shown before a proper tribunal that he has made the organism of man and his diseases, a special study.

This is simple and fair, and society owes this, not only to itself as self-protection, but also as a tribute of respect to the medical profession. "For," in the language of Dr. Willis, "who, since the revival of learning, have done more for every undertaking whose object has been to extend the boundaries of knowledge and to exalt mankind? Who knows half so much of the wants and the wishes, of the joys and sorrows of the community? Who are the friends and comforters in adversity especially, of persons in every grade of life, from the sovereign to the wretched outcasts of the streets, houseless, homeless, friendless, alone? Who disarms pestilence of its powers, and gives Jenners to the world? Who follow in the battle field, through the thickest of the fire, not that they may aid destruction in her work, but that they may staunch the wounds she makes? The servant of religion hath not more of true sanctity about him than the good physician. The service, indeed, that was rendered of old in special temples to the Divinity, conceived in one of his most beautiful attributes, is not yet extinct upon earth, but has its ministering priest, ennobled by Christianity, in every worthy member of the profession. Oh, let society cherish and exalt its medical community; let it become aware that if science can not aid it in its struggles with disease, neither can ignorance; that nothing can by possibility be known to the quacksalver and ignorant empiric that is not familiar to the educated physician; that a youth of devotion to his Art, is all too little to familiarize him with all the varieties of disease, and the means of meeting them successfully; and that there is no access to the temple of Medicine save through the intimate knowledge of the laws by which we live, and move, and have our being."

CINCINNATI, No. 258 Race Street, November 1, 1855.

# INTRODUCTION.

"In order to study and practice Medicine in a proper manner, it is necessary to be impressed with its importance; and to be so impressed, we must believe in it."* These words of a philosophic physician, whose life and writings breathe a sincere philanthropy, contain a deep sense, which constitutes, according to my opinion, the moral base of all Medical Practice. It is evident, indeed, that the practitioner who has no faith in the efficacy of his art, can not devote himself to the study and practice of it, with the necessary zeal, and perseverance. But, it will not suffice for the physician only to be convinced of the utility of the remedies he prescribes; it is also very advantageous to the success of the treatment, if the patient share his confidence in them. It is, then, important to all of us, to form early a reasonable opinion on the degree of efficacy and certainty that may be attained in medicine. Now, we shall not be able to draw the motives of such an opinion from any better source than the history of this science.

Another question which, though less important, does not lack interest, is, What is the origin of the Healing Art? Has it sprung from the natural wants of man, or rather, as some ancient and modern philosophers have pretended, is it only an evidence of the degeneration of the human species? It belongs to history alone to resolve this question in a decisive manner; for, if it appears from the most undoubted traditions, that there does not exist, and never has existed a people, whether savage or civilized, who have not had some species or other of Medicine, we are compelled to conclude from this, that this art is destined to satisfy an irresistible, imperious and natural want; and not a factitious one proceeding from effeminate habits, or some other vice of civilization.

Medicine, whose history I have endeavored to trace, was called, in its origin, the Art of Healing. It consisted at that time, in a succinct

* Cabanis. "Du Degré de Certitude de la Médecine," Préface, page 1.

description of diseases, which had been observed, and the indication of the remedies employed to combat them. These two parts correspond to what, at this day, are named Nosology and Therapeutics; they relate to man in a state of disease only.

Subsequently, those who devoted themselves to the practice of Medicine, enlarged, gradually, the field of their observations. Nosological descriptions became more extended and numerous, and the therapeutical indications more precise. They became convinced, that to understand diseases well, it was necessary to study man in a state of health. Thus Anatomy, or the knowledge of the structure of the human body, and Physiology, or the knowledge of Organic functions, became important branches of medical science. Experience, also, taught men that it is always more important, and often easier, to prevent the development of certain diseases, than to arrest their progress when once developed. Consequently, physicians turned their attention toward this object. They traced the rules for the preservation of health, and the collection of these rules constituted a new branch of the art called Hygiene. These successive additions necessitated a change in the definition of Medicine; the first, not embracing any longer all the departments of the science, the following was then nearly unanimously adopted:

"Medicine is a science which has for its aim, the promotion of Health, and the cure of Disease."

This was, for a long time, the limit of the Medical horizon; and it can not be doubted, but that the field was vast enough for the investigations of those who cultivated it. Nevertheless, they aspired to extend it, so constantly does the genius of man deride the limits which are assigned to it. Two interesting ramifications are developed recently, from this majestic trunk of science devoted to physical man. The first, named Orthopædia, teaches how to correct certain exterior deformities, whether accidental or congenital; the success it has attained, and the extension it has acquired, make it already a special branch of Medicine. The second ramification is called Phrenology, a Greek word, which signifies, literally, a discourse on thought, or on the faculties of the soul. But, by thought, here, is meant the organ which serves, more particularly, for its manifestation. It is then the organ of thought, that is to say, the encephalon, of which Phrenology treats. Those who have made a special study of this branch, believe that the development of the faculties of the soul, or rather, the manifestation of these faculties, depends on the volume and the form of certain parts of the encephalon. They hope even to determine, by the exterior examination of the cephalic box, the variations in the volume, and the form of the brain, and, consequently, the degree of development of its faculties. If Phrenology ever realizes

its promises, it will become a great aid to the physical and moral education of man. However this may be, the last definition that we have given to Medicine, appears to me a little too restrained, and it may be advantageously replaced, I think, by the following:—"Medicine is a Science, which aims at the Preservation of Health, the cure of Diseases, and the Physical perfection of Man."

We see already, by this simple announcement, what Medical Science strives to attain, and how much it merits the attention not only of those who make it a special study, but also of the Philosopher, the Statesman, and whoever appreciates the advantages of good health as well as the influence of the physique on the morale of man.

To the historian, Medicine presents itself in three principal phases, viz: as a Profession, as an Art, and as a Science.

As a Profession, Medicine was practiced, primitively, by the chiefs of families, of tribes, and of nations, and by generals and legislators. Afterward, it was joined to the Sacerdotal office for a very long time. At last, it constituted a distinct Profession, which was, at a later period, subdivided even into several departments. I have indicated, summarily, all these revolutions, with the circumstances that have led to them, and the good or evil consequences that have resulted.

In the point of view of an Art, that is to say, in regard to the rules which have been established at divers epochs for the cure of diseases and the preservation of health, Medicine appears to me to have followed a constantly progressive march from its origin to the death of Galen. Then it remained stationary, or even retrograded, at least in Europe, until the end of the fourteenth century of the Christian era. But from this epoch, the Healing Art took a new bound, and acquired, from generation to generation, remarkable perfection. Those who deny the progress of Medicine, have never seriously studied its history.

If it is true, and it can not be doubted, that Therapeutics is really the essential part of Medicine—if it, in fact, combines all the advantages of the science, it can not be questioned, but that the ancients are far in our rear. To prove this, it is sufficient to glance at any class of diseases, and compare the treatment employed formerly with that of our times. Examine, for example, that of acute diseases, intermittent fever, apoplexy, most of the anatomical lesions, the prophylactic treatment for variola, and then tell me if the therapeutics of the ancients, in all these diseases, can be compared with that of the moderns! The same result we find in regard to chronic affections, such as scrofula, syphilis, favus, etc. After this, is it not an exhibition of ingratitude or ignorance in those who pretend that Medicine rests stationary in the midst of universal progress? But man is so oblivious of benefits he has received, it may be said that he

has a memory only for the evils he has suffered! The storm which destroys in an instant the hope of the laborer, makes an ineffaceable impression on his memory, while the gentle sprinkling that fructifies his furrow, passes unperceived. Thus the discovery of the sulphate of quinia has made less noise in the world than that of the congreve rocket, and the name of Jenner is less known than that of Attila!

As a Science, so far as regards theories, Medicine offers the picture of a republic delivered up to many rival factions, which dominate by turns, without ever obtaining lasting power. Theory is an arena of interminable discussions, a real tower of Babel; it is the apple of discord among physicians. Who can flatter himself to hold the equal balance among so many diverse or contrary opinions, to distribute equitably praise and blame; to mark the precise limit in each where truth ends and error commences?

This difficult enterprise I undertook, not with a view of instructing others, but myself; not with the intention of publishing the result of my research, for I was ignorant what it would be, but pressed by a desire to assure myself if there exists in Medicine anything useful and certain, any principle whose evidence is striking as that of a mathematical axiom, some practical rule whose utility would be incontestable. I think that a physician who is animated with a sense of his duty can not remain indifferent on these questions, and that he must at least once in his life examine them seriously. If something of this kind exist in Medicine, I said to myself, the history of this science must make it apparent; and consequently I embraced with ardor and perseverance the study of this history. Now, in deciding to publish the result of my studies, I have no other aim than that of saving to my brethren a part of the labor which I have performed, by abridging for them the road I had to travel.

The only historian who has attempted to unravel the chaos of medical theories from the beginning to an epoch near our own (Kurt Sprengel,) has arrived at this conclusion—"that skepticism in Medicine is the top stone of the science, and that it is the wisest part to regard all opinions with indifference, and adopt none."* This maxim I hold to be erroneous, hopeless, and impracticable. No, whatever this erudite historian in Medicine may say, doubt is not the last word of science, it is only the commencement of it, the point of departure. It is merely a favorable disposition for acquiring knowledge, certainty, or at least conviction. So taught Aristotle, so proclaimed Descartes, and the intimate sense of each

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* "Hist. de la Médicine," trad. par, A. J. L. Jourdan, Paris, 1815, t. I, Introduction pp. 10, 11. See also the "Préface du Traducteur," p. 22, et suivantes.

one of us confirms the same. When we undertake the search for truth, it is with the desire and hope of attaining it, and if persuaded in advance that this desire and hope are vain, (as Sprengel pretends,) we would rest in careless repose, rather than uselessly fatigue ourselves in the pursuit of a chimera. Nevertheless, it may happen that our investigations will only produce a negative result, that we may remain in the ignorance and doubt whence we were anxious to emerge; but that is only an accidental or particular result, not the general or necessary one at which infallibly all human researches must arrive. We are ordinarily conducted to this negative conclusion by a bad method of reasoning, in the same manner that a false road conducts the traveler far from the true aim of his journey.

But if doubt should be rigorously maintained, concerning speculative truths, it must not be so in relation to those propositions destined to regulate our conduct. In regard to these, we are constrained to take a part whether we will or no; in other words, we must decide upon some conviction more or less strong. A physician, for example, may well doubt, when in his cabinet, if the difficulty of respiration realized by an asthmatic, proceeds from a lesion of the heart, or great vessels, or from an accumulation of mucus, or from a rheumatic condition of the muscles, or, lastly, from the nerves of the chest. But this physician once in the presence of his patient, after having examined him, will be obliged to make a prescription. Can there be for him any possible choice between doing something or nothing? Now, if he orders nothing, does he not so conclude from an opinion? and he does the same if he prescribes; the choice of doing nothing or something, supposes a motive more or less strong. Pure skepticism, then, is impossible in a practitioner who each day finds himself placed in the necessity of making a decision on which will depend, perhaps, the life of his fellow-man. A practitioner can, therefore, not indulge in the skeptical indifference of which the historian I have cited, boasts; he must, on the contrary, use every effort to free himself from it, and rise to the point of rational conviction.

It is with this disposition of mind that I have undertaken the examination of ancient and modern medical doctrines. I have studied and compared them with all the attention of which I am capable; for I wished to form an opinion based on the absolute or relative value, on the advantageous or injurious influence, of each one of them. The reader, then, must not be astonished if, in the course of this history, I emit often and in a very explicit manner, my own opinion on the theories under consideration. But, in fine, that the reader may be in a condition to appreciate for himself these theories, and the judgment that I form of them, I shall

present them with all the exactness I possibly can, employing for this purpose, the text even of the authors who have written in our own language, and that of the translations of the most esteemed foreign authors. I shall not pretend to translate them myself, except in cases where no translation has been made. I act thus, in the persuasion that a man who makes a particular and profound study of a work, translating it entire, must be penetrated with the spirit of the author much better than he who extracts from it a few pages only. Beside, I hope by this method to avoid the reproval of misrepresenting the opinions of others, either unknowingly or by design, and so preserve, as far as I am concerned, their color and original forms.

Celebrated physicians influence the progress of their Science and the value of their Art, not by their writings only, but by their oral teachings, character, and conduct. Their lives offer, often, models for imitation, and sometimes, also, faults and errors to be avoided. Often, too, the early education of a man, and the circumstances in the midst of which he was reared, explain the peculiarity of his genius, and give the key to his successes and reverses. For these reasons, I could not neglect entirely some biographic details relative to the most famous physicians, especially when these details had some connection with the general history of the Art, or embraced some moral considerations.

The sciences do not pursue their march isolated from each other, they go hand in hand, and it is rare that their progress is not simultaneous. An exception to this rule, however, presents itself in the history of the human mind in Europe. During the middle ages, dialectics and theology are cultivated successfully, while the other branches of human knowledge, and Medicine in particular, merely vegetate in deep neglect. But with the fourteenth century, industry, the sciences, and the arts, awake from their long sleep.

On the one hand, the civil and political organization of European nations becomes regulated, their material good increases; on the other, the intellectual and moral faculties of individuals are developed—the mind makes efforts freer, bolder, and in a better direction. The historian of Medicine would fail, it seems to me, in one of his duties, if he did not now and then give a general view of the state of society. Therefore, at the commencement of each of my Chronological divisions, I give a rapid sketch of the aspect which civilization then presented.

Another fact extremely remarkable, and of capital interest in the history of medical theories is, that they are all derived more or less directly, from some system of philosophy; so that only an incomplete idea of them could be obtained if the philosophic sources from which they were drawn were unknown. But too much importance must not be

attached to these analogies, nor must the value of medical theories be judged by them. It must not be forgotten that a philosophic system may be false as a whole, and yet true in its particular application to Medicine. On the other hand, we may, by false logic, deduce an erroneous medical theory from an irreproachable philosophic system. Thus, then, after having indicated the philosophic ideas with which each medical doctrine may seem to be related, we shall judge this in itself, and relative to its practical consequences.

The principal systems of antiquity concerning Cosmogony, or general physics, may be ranged in three sections, as follows:

1. Those that have at their head Pythagoreanism—representing the universe as inhabited by active and intelligent principles, which animate, fashion, and govern each material substance in a determinate way, and for a preconceived end. The animals, plants, and even minerals, possess, each, a vivifying spirit. Above these secondary principles rules the Supreme principle, who superintends the whole, harmonizing individualities, and causing them to concur to one common end.

2. Another class of philosophers, of whom Leucippus and Democritus seem to be the chiefs, considered the formation of the universe as a pure result of chance. They pretend to explain all the phenomena of nature without having recourse to the intervention of any intelligent principle. According to them, the world in general, and each being in particular, exists as a necessary result of the eternal laws of matter. They deny that different substances, such as plants and animals, were created for a preconceived end. They ridicule what was termed in the language of philosophy, final causes.

Finally, a third sect, which recognizes Parmenides and Pyrrho as their founders, who, believing that there exist in the natural movement of bodies, in their reproduction and endless changes, motives equally powerful to admit or reject the presence of immaterial and intelligent principles, concluded, from this ambiguity, that wisdom consists in remaining in doubt. "What is the use," say those sectators, "of fatiguing the mind in efforts to comprehend what is beyond its capabilities? The research after principles or first essences, has only resulted, thus far, in useless and interminable disputes. We receive no real knowledge but through our sensations, and we have no certainty in these beyond the objective exactitude." Such was, in short, the language of this sect, which sometimes took the name of Skeptic, to designate the perpetual doubt which they professed, and sometimes that of Zetetic, to indicate that they were always in search of truth, without flattering themselves to have found it. To these three systems of Philosophy among the ancients, correspond

three systems of Medicine, of which I shall merely indicate, now, the principal traits.

The first of all, known by the name of Dogmatism, is attributed to Hippocrates, its culminating idea being, that "there is a simple principle and multiple in its effects, that presides over the body and all its functions, creating contraries, and vivifying the whole and each part."—(Hippocr., *de l'Aliment*, § 7.) This idea is reproduced many times in the same work, and in others also, by the same author. It is the foundation of Vitalism, or modern Hippocratism, a doctrine that M. Professor Cayol has explained in so lucid a manner, in his introduction to the "Medical Clinic," and which M. Gibert has sustained with all the vigor and logic for which he is distinguished.*

One of the most celebrated nosologists of the last age, Pinel, has given an idea of disease conformable to this doctrine, when he says: "Disease should be considered, not as a tableau always in motion, an incoherent assemblage of recurring affections that are unceasingly to be combated by remedies, but as an indivisible unit, from its beginning to its termination—a regular totality of characteristic symptoms, and succession of periods with a natural tendency, most frequently favorable, though sometimes fatal."†

This definition, which presents disease to us as a regular succession of actions and movements sustained by the vital principle with a manifest purpose, shows already the connection that exists between the doctrines of Hippocrates and the Pythagorean philosophy; but this connection becomes more and more striking by the details which will be given hereafter, in the course of this history. For it would be a great error to suppose that the passages above quoted are a *résumé* of the entire medical theory of the physician of Cos. They must only be considered as one of the principal phases of his theory—one of its characteristic dogmas—the only one which has maintained its place down to our times.

The second system which is offered for our examination has received the name of Methodism, and recognizes as its founders, Asclepiades and Themison. The former studied, with great care, chronic diseases, in which the medicative force of nature is often imperceptible. He felt justified in denying the existence of this force, and turned into ridicule the Hippocratic dogmas on this subject. On the other hand, seduced by the

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* "Considerations sur l'Hippocratisme et l'Anatomisme." Paris, 1833, in 8.

† "Nosogr. Philosophique." 1st edition, Introduction, p. 7.

Atomic theory of Democritus, which Epicurus had developed and rejuvenated, he hastened to make an application of it to Medicine. He represented the human body as pierced by an infinity of *pores*, through which the atoms of various forms and sizes must pass and repass without cessation. These corpuscles, excessively attenuated, were supposed to move about automically, in virtue of the inherent force of matter. As long as the size and form of these atomic corpuscles were in exact proportion to the passage through which they had to move, was the health of the individual maintained. But as soon as the exactness of these relations was destroyed, the health was deranged; but this could only occur, says this physician, in two ways, viz: either by an excessive contraction or dilatation of the pores. In this system, the animal economy is regarded as entirely passive; no reaction, no spontaneity, no natural tendency whatever is attributed to it. The physician had but to direct the movement of the economy by means of modifying agents which art placed at his disposal.

The two preceding systems, as is plainly seen, were diametrically opposite; the one never lost sight of the natural activity of the organism in diseases; the other considered the human body as in a passive state only. But if pathological phenomena are observed without prejudice, it soon becomes evident that in the production of these phenomena, the organism is, by turns, both active and passive. Thus, when, from the infliction of a severe wound, general symptoms appear, such as fever, delirium, and convulsions, it is evident that under these circumstances the organism is at once active and passive; passive, in relation to the local lesion, the pain, and the shock experienced; active, relatively to the general functional derangement which is an effect of the vital reaction. If I may be permitted to make use of a vulgar illustration, borrowed from antiquity, to show the double action of the animal economy in the production of morbid phenomena, I will simply refer to the serpent, which, biting his own tail, is simultaneously the cause and the object of the action.

The Dogmatists did not deny that the organism is passive at the moment when it receives the impression of a nosogenic influence; but they regarded this impression as a simple occasional cause; they pretended that the disease only commences, really, with the reaction of the vital principle. This reaction, according to them, is the primitive and essential phenomenon, the proximate or occult cause of the morbid affection.

The Methodists, on the contrary, considered vital reaction as a secondary phenomenon, a species of oscillatory change, of which the proximate or primitive motor cause was the impulsion produced by the morbific agent.

A third class of physicians, at the head of which it has been customary to place Philinus and Serapis, thinking that the proximate cause, or the primitive phenomena of diseases, was inaccessible to observation, hence concluded that all which was affirmed on that subject, is arbitrary, hypothetical, and unworthy of consideration in the choice of a rational treatment. They asked that in the description and treatment of diseases, only such symptoms should be recorded as fall under the notice of our senses. The totality of these phenomena constituted, in their eyes, the whole morbid affection, or at least all that could be known or affirmed in regard to it.

Consequently, they assumed, that in any given case, only such remedies as had appeared to be valuable in similar cases, should be employed, without any regard to the proximate, essential, or occult cause, of which, they say, nothing reveals to us the mode of action. As their reasoning did not go beyond those things which have already, or may yet become matters of observation and experience, they took the name of *empirics*, which signifies experimenters. They have been classed with the skeptical philosophers, who place nothing in the rank of certain and positive knowledge, but the sensations.

A considerable number of physicians would not adopt any of these systems, exclusively, but drew from each what to them seemed to be most conformable to reason and experience. They called themselves *Eclectics*, from a Greek word, which signifies, to choose; by which they wish to imply, that they made a rational choice of what appeared to be best, of all doctrines. It must be admitted, that this is a very laudable design, though somewhat pretentious. They should, however, have indicated the rule by which they were guided in this choice, what principle they followed in discerning, among so many contradictory opinions, truth from error, the reality from fallacy, and the good from evil.

This is what the Eclectics ought to have been able to do, but what they have not done. They contented themselves by affirming that they followed, in every case, the voice of experience and of reason, without permitting themselves to be influenced by any prejudice, or systematic idea. But we must take their word for it, for they have emitted no axiom which enables us to see it for ourselves. Eclecticism is, in reality, neither a system nor a theory; it is, uniquely, an individual pretension, elevated to a dogma. Each Eclectic recognizes no other rule, than his particular taste, his individual reason, or his fancy. Two, so called, Eclectics have seldom anything in common, but the name.

The Eclectic carefully avoids the discussion of principles. He has little taste, or little capacity for high abstractions. He believes them useless, not to say injurious to the practice and progress of the art. In

a word, the assumption of the name of Eclectic conveys a very unfavorable idea as to the fixity of their philosophic principles. But the Eclectic may be, and often is indeed, a good practitioner. If, on the one hand, he disregards the fundamental principles of science, on the other he concentrates his attention on details; and we all know that practical skill is based, particularly, on specialties. To such may, with good reason, apparently, be applied the proverb, "good practitioner, bad theorist." Not that he, necessarily, has no theoretic ideas; that is impossible; but his ideas form no system, and are not based upon general principles. With him, medical tact, that is, cultivated instinct, takes the place of principles. Such was the erudite Barckausen, who, in reviewing medical theories, found in all, something to blame, and something to praise, without giving to any one a marked preference.

The Eclectic of our times is, ordinarily, only an empiric in disguise; but an empiric, in an honorable sense of that term; that is to say, a man whose opinions are based on the pure and simple observation of facts, carefully compared; whose theoretical ideas do not go beyond phenomena. In order to form a system, his ideas only need to be united by a common tie, under the guidance of a philosophic principle.

I have just expressed the idea that it is impossible for a man to practice Medicine without any species of theory. This is an axiom which has no need of demonstration, says Professor Bouillaud.*

Doctor Auber unites in this opinion. "Be well convinced," says he, "of one thing, that there is no practitioner who has not, however limited, his theory, and who may not, also, be carried away by it at the bedside, seeing that it is, necessarily, by reason of some idea, false or true, wise or foolish, scientific or vulgar, that even the most senseless physician determines, or is compelled automatically, to act in one way rather than in any other, and on this account it is said, with infinite reason, that the practice must ever submit to the yoke and exigencies of even the most contemptible theories."—("Traité de la Philosophie Médicale." Paris, 1839, p. 185.)

To those readers who may accuse me of attaching too much importance to the examination of theories, I must respond,—theories have been, and will forever be, the compass of the practice.

Anciently, philosophy embraced the whole of human knowledge, physics, natural history, medicine, morals, metaphysics, theology, mathematics, etc. The philosopher was not permitted to be unacquainted with any of them. Now, physics, natural history, medicine, and many other

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* "Essai sur la Philosophie Médicale et sur les Généralités de la Clinique Médicale." Paris, 1836, page 302.

branches of philosophy have been detached from the main trunk, and constitute separate sciences. From this separation, it results that modern Medicine has borrowed less from philosophy, properly so called; but in compensation, it has been influenced by other sciences, such as physics and chemistry.

From the end of the fourteenth century of our era, to the commencement of the nineteenth, we count, in Medicine, five classes of principal theories, namely: the ancient Humoralism or Galenism, the Iatro-Chemical, the Iatro-Mechanical, Animism or Vitalism, which is confounded with modern Hippocratism, and finally, Organo-Dynamism.

I shall not extend further these general considerations, or I should encroach on what will be said in the course of this history, where the theories to which I have alluded, and some less important ones, will be properly treated.

The following is the chronological order which I have thought it proper to adopt: I divide into three Books, or three Ages, all past time. The First Age commences with the infancy of society, as far back as historic tradition carries us, and terminates toward the end of the second century of the Christian era, at the death of Galen, during the reign of Septimus Severus. This lapse of time constitutes, in Medicine, the Foundation Age. The germ of the Healing Art, concealed, at first, in the instincts of men, is gradually developed; the basis of the science is laid, and great principles are discussed. The human mind, always impatient, surpasses in its speculations, the limits of the known and possible. Many branches of the art, such as Symptomatology and Prognosis, are carried to a remarkable degree of perfection.

The Second Age, which may be called the Age of Transition, offers very little material to the history of Medicine. We see no longer the conflicts and discussions between partisans of different doctrines; the medical sects are confounded. The art remains stationary, or imperceptibly retrogrades. I can not better depict this epoch than by comparing it to the life of an insect in the nympha state; though no exterior change appears, an admirable metamorphosis is going on, imperceptibly, within. The eye of man only perceives the wonder after it has been finished.

Thus, from the fifteenth century, which is the beginning of the third and last Age of Medicine, or the Age of Renovation, Europe offers us a spectacle of which the most glorious eras of the republics of Greece and Rome only can give us an idea. It would seem as if a new life was infused into the veins of the inhabitants of this part of the world; the sciences, fine arts, industry, religion, social institutions, all are changed. A multitude of schools are opened for teaching Medicine. Establishments which had no models among the ancients, are created

for the purpose of extending to the poorer classes the benefits of the Healing Art. The ingenious activity of modern Christians explores and is sufficient for everything.

These three grand chronological divisions do not suffice to classify, in our minds, the principal phases of the history of Medicine; consequently, I have subdivided each age into a smaller number of sections, easy to be retained, and which I have named Periods. The first Age embraces four periods, the second and third ages, each, two.

I will now indicate succinctly, each of these secondary divisions, without attempting, at present, to justify them, for this will be done in its proper place in the course of the work.

The first period, which we name *Primitive Period*, or that of *Instinct*, ends with the ruin of Troy, about twelve centuries before the Christian era.

The second, called the *Mystic* or *Sacred Period*, extends from the dissolution of the "Pythagorean Society" to about the year 500, A. C.

The third period, which ends at the foundation of the Alexandrian Library, A. C., 320, we name the *Philosophic Period.*

The fourth, which we designate the *Anatomic*, extends to the end of the first age, i. e., to the year 200 of the Christian era.

The fifth is called the *Greek Period;* it ends at the destruction of the Alexandrian Library, A. D. 640.

The sixth receives the surname of *Arabic*, and closes with the fourteenth century.

The seventh period, which begins the third age, comprises the fifteenth and sixteenth centuries; it is distinguished as the *Erudite.*

Finally, the eighth, or last period, embraces the seventeenth and eighteenth centuries. I call it the *Reform Period.*

In this division of the past, there is wanting that portion of the nineteenth century which has already passed. I have omitted it for the following reasons: First—I have asked myself, is it possible to write cotemporaneous history with the same independence of mind as that of the past? Secondly—Is it suitable, in speaking of living authors, to omit all biographic details? Thirdly—Is there not danger of exaggerating cotemporaneous opinions and discoveries? Lastly—Can we seize the general physiognomy of an epoch while living in its

midst? Does not one in such a position resemble a man who, placed at the foot of an edifice, thinks himself capable of appreciating the effect of the whole structure?

All these considerations, have led me to fear that I could not trace the history of our own times after the same plan as that of the history of the past, and I have therefore taken, as my limit, the end of the eighteenth century.

I propose, however, to give hereafter, under the title of Materials for Cotemporaneous Medical History, a discussion of the theories, discoveries, and improvements that have signalized the first half of the present century. This will form a supplement to the second volume.*

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*See Appendix.

# SYNOPTIC TABLE

OF THE AGES AND PERIODS OF

# THE HISTORY OF MEDICINE.

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| Age of Foundation, | I. Primitive Period, or that of Instinct. | Ending with the destruction of Troy, 1184 years before Christ. |
| | II. Sacred, or Mystic Period. | Ending at the dispersion of the Pythagorean Society, 500 years before Christ. |
| | III. Philosophic Period. | Ending at the foundation of the Alexandrian Library, 320 years before Christ. |
| | IV. Anatomic Period. | Ending at the death of Galen, A. D. 200. |
| Age of Transition, | V. Greek Period. | Ending at the burning of the Alexandrian Library, A. D. 640. |
| | VI. Arabic Period. | Ending at the revival of letters, A. D. 1400. |
| Age of Renovation, | VII. Erudite Period. | Comprising the XV. and XVI. centuries. |
| | VIII. Reform Period. | Comprising the XVII. and XVIII. centuries. |

# HISTORY OF MEDICINE.

## BOOK I.

## AGE OF FOUNDATION.

EXTENDING FROM THE ORIGIN OF SOCIETY TO THE END OF THE SECOND CENTURY OF THE CHRISTIAN ERA.

### I. PRIMITIVE PERIOD.

OF VARIABLE DURATION AMONG DIFFERENT PEOPLE.

#### GENERAL CONSIDERATIONS.

This period, which corresponds with the early infancy of human society, is enveloped in profound obscurity, and mingled with a multitude of fables It embraces an indefinite lapse of time, during which, Medicine, did not constitute a Science, that is to say, a systematic assemblage of rational knowledge, but formed rather an undigested collection of experimental notions, vaguely described, and more frequently disfigured by a series of incomplete traditions. It is easily understood, that such a state of things must have existed, a longer or shorter time, in different parts of the globe, in proportion to the progress, more or less rapid, that the inhabitants of those parts made in the career of civilization. This state of things still exists among certain tribes in the center of Africa, in some parts of America, and especially in Oceanica. But for Greece, which has transmitted to us the most precious memorials of antique Medicine, the Primitive Period ended, as we shall see further on, at the destruction of Troy, in the course of the twelfth century before the Christian era.

Before following the trace of the Art of Healing, on the classic ground of the Hellenists, we shall seek the first vestiges of it among other nations that preceded the hellenic nation, on the route of social progress, and who furnished it, in those remote times, models, in more than one sense. Consequently, we shall, in the first place, cast a glance at the antique Medicine of the Egyptians, the Jews, the Indians and the Chinese; then we shall describe the state of Greek Medicine, before the Trojan war, and finally say a few words on the manner in which this Art was cultivated, primitively, among some nations less celebrated, both in the Old and New World.

## CHAPTER I.

### MEDICINE OF THE ANTIQUE NATIONS.

#### I. MEDICINE OF THE EGYPTIANS.

If we accord the first place, in this history, to Egyptian Medicine, it is not without a motive. It seems to us to merit this honor, not only because its antiquity is based on monuments, the most authentic, but also because it has been the source whence the Greeks drew the first elements of this science; and in this respect also the Egyptian nation may be justly named, the instructress of the human race. We read in the Bible, that when Jacob died, "Joseph commanded his servants, the physicians, to embalm him; and the physicians embalmed Israel, and forty days were fulfilled for him, for so are fulfilled the days of those that are embalmed." (Gen. chap. l.) Thus, at the death of the Patriarch Jacob, about 1700 years before the birth of Christ, Egypt possessed men who practiced the art of medicine. This passage, in the writings of Moses, is the most ancient authentic monument that we possess of the Healing Art; all that is more remote in the history of Egypt, and of other nations, is enveloped in uncertainty and obscurity, at least so far as medicine is concerned.

Nevertheless, it is certain, that before the time of the emigration of the sons of Jacob to Egypt, the arts and sciences had already attained, in that country, a degree of perfection which could only be the result of long experience, that required very many years or rather centuries of observation. The books of the Hebrews, furnish other more valuable information on this subject. We read in them, that when Abraham was constrained by the famine, to quit the land of Canaan, he entered Egypt, where he found an abundance of everything to nourish his household and his flocks. At this epoch, which preceded the death of Jacob 230

years, Egypt rejoiced in a very advanced state of civilization. Agriculture, Geometry, Architecture, Metallurgy, had all then made a remarkable progress. Thebes, the city of a hundred gates, existed as well as some of those gigantic edifices, destined to transmit to posterity, the evidence of the power and wisdom of the Pharoahs.*

But through how many phases must the Egyptian nation have passed, before its intelligence and industry had acquired such a development! How many centuries must have run by, before her men possessed the means of perpetuating the memory of great events and useful inventions! The arts of speaking and writing, these two indispensable instruments for the transmission of ideas, how were they created? By what series of gradual improvements did they arrive at that point of clearness, requisite to produce exactly the image of the thoughts? The most arduous and subtle researches, teach us nothing, or next to nothing on these interesting questions; the science of Champollion is mute on this point; the sacred books alone clear up this difficulty, in saying that God taught to man, the names of all animate and inanimate things.

So then, the generations that have bestowed upon the human race the most useful discoveries, have themselves passed away, without leaving any other impression of their passage. Those who undertook, in aftertimes, to collect the records of humanity, in place of transmitting pure and intact, the few documents of which they yet held possession, enveloped them with fiction, which renders the truth more and more uncertain. But it must be said, for their justification, that these first chroniclers had especially in view, the inculcation to man of the principles of sociability, morality, and religion, and that their marvelous, or allegorical recitals attained much more directly the end they aimed at, than if they had stated the naked truth. It is for this reason, doubtless, that instead of seeking, laboriously, the primitive source of the arts and sciences, on the earth, they placed it in the heavens, and that they attributed to their gods, or to men they deified, all great discoveries. On this account, therefore, the cradle of Medicine, as well as all the arts of first necessity, is surrounded with fables and allegories.

I shall glide slightly over this medical mythology, which, in this day, can neither delude any one, nor furnish any satisfactory light on the state of the science in primitive times, and would constitute nothing more than a display of erudition as sterile as it would be out of place in an elementary work. I shall only say on this subject, what is indis-

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* Lettres de Champollion jeune, relatives au Musée Egyptien de Turin, p. 25 et suivantes.

pensable to be known, in order not to appear ignorant in the eyes of men who have a smattering of the history of our Art.

Thoth, or Theyt, whom the Greeks name Hermes, and the Latins Mercurius (Mercury), passed, among the Egyptians, as the inventor of all sciences and arts. He has been supposed to be the author of an encyclopedic collection, in which, it is said, was comprised all the wisdom of the ancient priests of the country. But this collection has been lost, at an unknown period, and no writer, who refers to it, speaks of having seen it: all refer to it as traditionary. There are also various statements as to the number of books of which it was composed. Some say there were twenty thousand; others thirty-six thousand; others, on the contrary, reduce the number to forty-two volumes, only. It appears difficult, if not impossible, to reconcile these opinions, so adverse; nevertheless some have attempted so to do; among others, Galen, Hornius, and Bochard; but none of their explanations are reliable.

Neither is there a better agreement as to the person of Hermes, nor of the time in which he lived. According to many conjectures, which have about equal claim to truth, this personage was Bacchus, Zoroaster, Osiris, Isis, Serapis, Orus, or Apollo, or Shem the son of Noah. Others think that Hermes was a god, to whom the Egyptian priests dedicated all their scientific productions, by inscribing his name at the head of their writings. Benjamin Constant emits a conjecture, more reasonable if not more true. "In the great religious corporations," says he, "the sacerdotal instinct warns (l'avertissait) them, never to permit any individuality to be manifested. What we have taken for the proper names of the Chaldean and Phenician writers, was probably only the designation of a class. The word *sanchoniaton*, signifies, among the Phenicians, a savan, a philosopher, or, in other words, a priest. Many East-Indians have assured the Chevalier Jones, that Boudda was a generic name. In Egypt, all the works on religion and the sciences bore the name of Thoth, or Hermes."*

M. Houdart, who agrees with this last view, and fortifies it by proofs certainly more numerous than decisive, gives, beside, on the contents of this hermetic encyclopedia, details which are nowhere else found as well deduced. I think I cannot do better than give a textual statement of his remarks. "Finally," says Houdart, "that the reader may judge of the immensity of the knowledge of the savans of ancient Egypt, I place before him the titles of the forty-two volumes of this hermetic collection. The first two contained hymns to the gods, the others, duties of

* De la Religion. Paris, 1824, t. 11, p. 120.

the kings. The four following treated of the order of the wandering stars, of light, and of the rising and setting of the sun and the moon. In ten others was given the key to their hieroglyphics; a description of the Nile, of sacred ornaments, of holy places; and beside these, instructions in astronomy, in cosmography, and the geography and topography of Egypt. Ten other volumes related to the choice of victims, divine worship, religious ceremonies, festivals, public celebrations, etc. A like number of volumes, which were called Sacred, were consecrated to the laws, to the gods, and to all the discipline of the priesthood. Finally, the last six treated of Medicine. We leave to the reader the care of deducing all the results of such an encyclopedia. What we wish particularly to refer to, is, that the last six volumes, which related to Medicine, embraced a body of doctrines, complete and well arranged. The first treated of anatomy, the second of diseases, the third of instruments, the fourth of remedies, the fifth of diseases of the eye, and the last of diseases of women. It must be agreed that this distribution was very methodic. In the first place there was given, a description of the human body, showing, by this, that it was necessary to commence with a knowledge of the system on which it was necessary to operate; then they pass to the study of diseases; thence to medicines and instruments employed in their treatment. As the affections of the eye, and the diseases of women are very frequent, and as they demand particular attention, they were studied separately. This is certainly a complete and well arranged body of medical matter.*

No one will contest the excellency of this plan of Medical studies that M. Houdart has just traced, but what is most doubtful, is, that a plan so well arranged can be referred to a period so early in human society. Without attempting to discuss this point, I will simply remark, that the Hippocratic collection posterior to this, by a thousand years, according to the supposed date of the encyclopedia, does not present as complete and as methodic a system. Further, how can we admit that the Egyptian priests would attach a very high value to anatomical studies, when it is known that the school at Cos, initiated in the doctrines of these priests, and much more advanced than they, in all branches of medical science, possessed, nevertheless, but very vague notions on the conformation of the human body, except in what relates to osteology. Everything justifies us in believing that the plan of medical education which is attributed to the priests of Egypt, is the work of some writer of the Alexandrian school; for it was about the epoch

* "Etudes Historiques et Antique sur la Vie et la Doctrine d'Hippocrate, et sur l' état de la Médecine avant lui," par M. Houdart. Paris, 1840, p. 135.

of the foundation of that city, that anatomical researches and medical philosophy began to flourish.

Nevertheless, the description that M. Houdart gives of the progressive march of the sciences in Egypt, and in particular of the method followed by the priests in the practice of medicine, is both interesting and instructive. On this account, I continue to quote his remarks, but, at the same time, expressing my doubts of the exaggerated appreciation of the results which this writer conceives are derived from the Egyptian school. "It is not necessary to suppose," he adds, "that Medicine reached, suddenly, in Egypt, this degree of perfection. As was common among other people of high antiquity, they commenced, in the first place, as we learn from Strabo, by exposing the sick in public, so that any of those who passed by, that had been similarly attacked and cured, might give their advice for the benefit of the sufferers.* At a later period, this plan was much better calculated to accelerate the progress of the art; for all who were cured of disease were required to go and make an inscription in the temples, of the symptoms of their disease, and the curative agents which had been beneficial to them, The temples of Canopus and Vulcan, at Memphis, became the principal depôts of these registers, and they were kept with the same care as the archives of the nation. For a long time, every one had the privilege of going to consult them, and of choosing for his sickness, or that of his neighbors, the medicaments of which experience had confirmed the value. This method was very good, notwithstanding its inconveniences, to advance science, because it rested entirely upon observation. In this way, must have been collected a prodigious quantity of facts, from which might be deduced correct principles in the practice of Medicine, and this, indeed, was brought about. The priests, who were charged with the study of these observations, did not hesitate to seize upon the exclusive practice of the Art, and when they had collected a great mass of facts, they formed a Medical Code, the fruit of the experience of ages, which is called by Diodorus, of Sicily, the Sacred Book, from the directions of which they were never permitted to vary. It was, doubtless, this code, which was afterward attributed to Hermes, that made up the collection spoken of by Clement, of Alexandria, and which the Pastophores followed in the practice of Medicine If, in following the rules there laid down, they could not save their patients, they were not held responsible; but, according to Diodorus, of Sicily, they were punished with death if, after departing from them the result did not justify

* According to Herodotus and Strabo, the same usage appears to have existed among the Babylonians and Lusitanians.

their course. Unquestionably this was an atrocious law, and must have arrested all ulterior progress in the Healing Art. Nevertheless, it should be stated, that it was not made before the correctness of those principles had been well established. Diodorus is decisive on this subject; he says, positively, that the design of a law, so severe, was, that a practice confirmed by long experience, and supported by the authority of the greatest masters of the Art, was preferable to the limited experience of each particular physician.*

I have already indicated my objections to M. Houdart, for exaggerating so much the progress of Egyptian Medicine in these remote times, and I shall not add to what I have said, but one simple question. I will ask of this erudite, who attempts to justify, like Diodorus, this foolish and iniquitous Egyptian law, what judgment he would give, to-day, upon the Sovereign or Senate who would attempt to re-establish and execute a similar one, under the pretext that our medical code is the fruit of the experience of ages, and that the solidity of the principles which serve as its base, is sufficiently established? Doubtless, he could not sufficiently curse such a senseless tyranny, so contrary to the progress of science and the best interests of the diseased. Finally, I will ask, how is it that he has conceived so high an idea of the Egyptian doctrine, which rests upon some vague and doubtful traditions, while he blames, with excessive severity, the Hippocratic doctrine, of which there remains to us irrefutable monuments which have excited the admiration of the greatest masters?

It is usually supposed that the practice of embalming, which goes back to an immemorial period, as already indicated, was well calculated to familiarize the Egyptian priests of that early day with anatomical researches. But Sprengel has justly observed, that this process was too rude to have contributed very much to the advancement of the science. He adds, that according to Herodotus, the people had a horror of these proceedings, and that they pursued and threw stones at the parachute who made the incision, through which were introduced into the corpse the ingredients destined to dry and preserve it. This subaltern operator was obliged to fly immediately after he had done his work, in order not to become the victim of the animadversion of his assistants. When Pliny assures us that the kings of Egypt permitted the opening of the corpse, for the purpose of discovering the causes of diseases, he always means the Ptolomies, under whose reign anatomy was carried to a very high degree of perfection.†

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* "Etudes Historiques et Critiques," etc., p. 136.

† C. Sprengel, "Histoire de la Médicine, traduction de M. Jourdan," t. I, p. 60 et suiv. See "l'Histoire de l'Anatomie," par Th. Lauth. Strasbourg, 1815, liv. 1,

According to the authors I have just named, there were three sorts of embalmments, namely: that of the first class, reserved for men of quality and wealth, which cost one talent; that of the second class, which was adopted by families of moderate means, which cost about twenty *mines;* lastly, a mode of embalmment for the poor, which consisted simply in washing the body and macerating it for seventy days in lye. In the process of embalming the first and middle classes, the brain was removed by an opening through the nasal fossæ, and an incision was made on the left side of the abdomen, through which the intestines were withdrawn, and spices and more or less costly aromatics were introduced; after which, the body was washed, as above stated, then spread over with gum, and wrapped in bandages of linen.*

The Egyptian nation was divided, from the earliest times, into six orders, as follows: the king and princes, priests, soldiers, shepherds, laborers, and lastly, artisans. The order of the priesthood was most respected and the most powerful; it was the depôt of the laws, science, and religion. The sovereign, before taking the reins of government in his hands, was affiliated to the sacerdotal order, and initiated into its mysteries. The care of the priests to conceal their doctrines is well known, and that they might do it more effectually, and transmit them to their successors, they employed a peculiar language and mode of writing, termed hieroglyphical or sacred, which differed essentially from the common language of the people. While the vulgar prostrated themselves before rude images, emblems of the attributes of the divinity, or of the wonders of creation, the learned classes, which included medical men, recognized an invisible and eternal Sprit, the Supreme Governor of the universe.

### II. MEDICINE OF THE HEBREWS.

The Sacred History says, positively, that Moses, having been rescued from the river by one of the daughters of Pharaoh, was reared in the court of that Prince, and instructed in all the knowledge of the Egyptian priesthood, in which he became a proficient. On this account, when he presented himself before his sovereign, to demand, in the name of the God of Israel, the freedom of his brethren, who were reduced to an unjust and cruel servitude, he was not at all embarrassed by the

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where the question, if the Egyptians possessed an anatomical knowledge, is examined and thoroughly answered negatively.

* C. Sprengel, *ibidem.*—Herodotus liv. II, chap. LXXXV-LXXXVI. Diodorus, chap. XCI. Pariset, "Memoire sur les Causes de la Peste." Paris, 1837, page 4, et suiv.

prestiges of the magicians and savans that Pharaoh so frequently summoned to meet him in the palace. He proved the legitimacy of his mission, in confounding the pride of the magicians by prodigies more wonderful than theirs, and finally overcame the interested obstinacy of the king, and had the glory of delivering his brethren from the yoke that had pressed so heavily upon them for nearly two hundred years. All are familiar with the great obstacles he overcame in leading them back to the land of their forefathers, and how well he availed himself of long and weary wanderings in the wilderness, to give to them the moral and political laws inspired by God.

The writings of Moses constitute a precious monument for the history of Medicine; for they embrace hygienic rules of highest sagacity, and which may be regarded as a detached fragment of Egyptian science. It is in Leviticus that the prophet-legislator has recapitulated the greater part of the rules concerning the care to be given to the health. The eleventh chapter contains a long enumeration of animals reported impure, that is, unhealthy; among which are mentioned the rabbit and the hog, whose flesh produces no injurious effects in European climates, but might have done in Egypt and India, among men whose habits differed so much from ours. It may be, moreover, that the species designated by these names were not the same as those with which we are so familiar. In short, it is possible that Moses, in making these prohibitions, had other views than those ascribed to him.

The twelfth and fifteenth chapters of the same book were designed to regulate the relation of a man to his wife. In reading these precepts, one can not repress a sentiment of admiration for the wisdom and foresight which made such salutary regulations a religious duty. The following extract will enable the reader himself to judge of this.

1. "The Lord spake again to Moses, and said to him,

2. "Speak to the children, saying, if a woman have conceived seed, and borne a man child, then shall she be unclean seven days; according to the days of the separation of her infirmity shall she be unclean.

3. "And in the eighth day, the flesh of his foreskin shall be circumcised.

4. "And she shall then continue in the blood of her purifying three and thirty days; she shall touch no hallowed thing, nor come into the sanctuary, until the days of her purifying be fulfilled.

5. "But if she bear a maid child, she shall be unclean two weeks, as in her separation, and she shall continue in the blood of her purifying threescore and six days.

6. "And when the days of her purifying are fulfilled, for a son or for a daughter, she shall bring a lamb of the first year for a burnt-offering, and a young pigeon or a turtle-dove for a sin offering, unto the door of the tabernacle of the congregation, unto the priest, * * * and the priest shall make an atonement for her, and she shall be clean."

Chap. xv, v. 19, "And if a woman have an issue, etc., she shall be put apart seven days.

20. "Whatever shall touch her shall be impure till even."

24. "And if any man lie with her at all, and her flowers be upon him, he shall be unclean seven days, and all the bed whereon he lieth shall be unclean.

25. "And if a woman have an issue of her blood, many days out of the time of her separation; all the days of the issue of her uncleanliness shall be as the days of her separation: she shall be unclean."

28. "But if she be cleansed of her issue, then shall she number to herself seven days; and after that she shall be clean.

29. "And on the eighth day she shall take unto her two turtles, or two young pigeons, and bring them unto the priest, to the door of the tabernacle of the congregation."

Apart from the religious ceremonies, the utility of which is incontestable, in order to secure the execution of the hygienic precepts—might it not be said that these are extracts from a modern work on hygienics? What could be more salutary than the momentary separation of married persons at the periodical return of certain functions which almost amount to an infirmity with women? or what could be more ingeniously contrived to prevent the disgust that might arise from an uninterrupted cohabitation? The author of Emilius gives similar counsel, three thousand years later.

The Bible also prescribes frequent ablutions, a custom which has always appeared to be necessary in hot, dry countries, and among a people who made no use of body-linen. But what more excites the astonishment of physicians, is the tableaux that Moses has made of the white leprosy, and the regulations he established to prevent its propagation. He has given the following characteristics of this disease, in the thirteenth chapter of Leviticus.

2. "When a man shall have in the skin of his flesh a swelling, as a scab or bright spot, and it be in the skin of his flesh, like the plague of leprosy, then he shall be brought unto Aaron, the priest, or unto one of his sons, the priests.

3. "And the priest shall look on the plague in the skin of the flesh, and when the hair in the plague is turned white, and the plague in

sight be deeper than the skin of his flesh, it is a plague of Leprosy; and the priest shall look at him and pronounce him unclean," etc.

Ancient authors have confounded under the name of Leprosy, a great number of diverse affections; hence it results, that these descriptions do not agree with each other, nor with the writings of Moses. Cutaneous pathology was a real chaos, which has only been reduced to a system very recently, so that it is impossible now to give an opinion on the exactness of the signs above indicated. Some of them conform to a disease called White Leprosy, by modern dermatologists, but others do not. What augments our uncertainty, is the opinion universally admitted, and very probable too, that by the influence of hygienic conditions, entirely different, certain diseases may have disappeared, or become so modified, as to be of no importance, while new ones may have been developed. Without this consideration we would be led to suppose, that it was a mere prejudice, very excusable at so early a period in medical science, that caused Moses to write concerning the leprosy which clung to the clothing, and to the walls of houses, and which, according to the sacred writer, manifested its presence on inanimate objects by evident characteristics.*

After the promulgation of the Decalogue, the man most prized in the Holy Scriptures for his science, was Solomon. They tell us that this monarch surpassed in wisdom all the Orientals, and even the Egyptians, that "he spoke five hundred proverbs, and his songs were three thousand. He spoke of plants, from the cedar of Lebanon, even unto the hyssop that springeth out of the wall; he spoke also of beasts and of fowl, and of creeping things, and of fishes." The historian Josephus adds, "that God gave to this prince a perfect knowledge of the properties of all the productions of nature, and that he availed himself of it, to compound remedies, extremely useful, some of which had even the virtue to cast out devils."†

It is clear from the above, that Moses always gave his instructions concerning leprosy and other infirmities, to the priests only; from which it may be inferred that at this epoch, the Levites joined the practice of Medicine, to their sacerdotal functions. It appears that they maintained for a long time, this double relationship to society, for there is no mention made of lay physicians among the Jews, except in the Book of Ecclesiastes, the author of which lived in the third century before Jesus Christ. The following references are made on this subject:

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* Lev. Chap. XIII. et XIV.

† Liv. VIII. Chap. II.—Leclerc, "Hist. de la Médecine." 1re partie, Liv. Chap. III.

"Honor the physician, because he is indispensable, for the Most High has created him."

"For all Medicine is a gift from God, and the physician shall receive homage from the King."

"The Science of Medicine shall elevate the physician to honor, and he shall be praised before the great."

"The Most High has created the Medicines out of the earth, and he that is wise will not abhor them."*

### III. MEDICINE OF THE ORIENTAL INDIANS.

Under the name of Indians, we comprise all those tribes that inhabit that vast extent of country, bounded on the east by China, on the west by Persia, on the north by little Thibet, and on the south by the sea. Though now divided into many kingdoms or principalities, the inhabitants of these countries appear to have had in antiquity, a common origin, the same religion, and similar institutions. The mildness of the climate, and the fertility of the soil, which produced abundantly the necessities of life, must have invited early the occupation of man; and authentic monuments attest that India possessed the blessings of civilization, while Europe was still plunged in the darkness of barbarism. Some writers even go so far, as to pretend that the torch of civilization, was transported from the banks of the Ganges, to the banks of the Nile; but this is only a simple conjecture, devoid of proof, while the contrary view is at least as probable.

The Indians are divided into many castes, of which the most noble is that of the priests or bramins. These only have the privilege to exercise the functions of priests and physicians; they alone learn the Sanscrit, which is the language of the learned of those countries, and in which all their books are written. Their medical knowledge is collected in a book which they name Vagadasastir. We possess of this work only a few extracts, the exactness of which I dare not guarantee; for such as they are, they give too poor an opinion of the knowledge and judgment of the Hindoo doctors.

This organon of Medicine, is divided into eight parts; the first treats of diseases of children; the second of bites of venomous animals; the third of affections of the mind, which are produced, as generally supposed, by demons; the fourth part, is consecrated to diseases of the sexual organs; the fifth to hygiene and prophylactics; the sixth to surgery; the seventh to treatment of diseases of the eye, and of the head;

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* Ecclesiastes, Chap. XXXVIII, verses 1, 2, 3, 4.

the eighth gives directions for the preservation of youth, and the beauty of the hair. It is plain that no philosophic idea, lies at the foundation of the arrangement of this medical encyclopedia.

They admit three principal sources of internal diseases, viz: *flatulency, wodum, vertigo, bittum, impure humors, t'chestum.* They further believe that all cutaneous diseases, were caused by worms. According to them there were in the human body, one hundred thousand parts, of which seventeen thousand were vessels. Each one of these is composed of seven tubes, giving passage to ten species of gases, which, by their conflicts, engendered a crowd of diseases. They placed the origin of the pulse, in a reservoir, situated beneath the umbilicus. This reservoir was four fingers wide, by two long, and divided into seventy two thousand canals, which were distributed to all parts of the body. Upon a physician examining the pulse of a patient, he observed at the same time very carefully, his countenance, believing that every change in the pulsation of the artery, answered to a corresponding change in the expression of his face. He examined also the feces and the urine, consulted the stars, the flight of birds, the accidental incidents in his visit, he drew, in a word, his prognosis from a thousand different circumstances, but omitted those which alone could be available to him, namely, the symptoms indicating the state of the organs.

The following maneuver, admirably illustrates the silly credulity or arrant charlatanism of the Hindoo physicians. He let fall from the end of a straw, a drop of oil, in the vessel containing a specimen of his patient's urine. If the oil was precipitated, and attached itself to the bottom of the vessel, he predicted an unfavorable result; if, on the contrary, the oil floated, he announced a favorable termination; from which, according to this method, an unfavorable prognosis must have been rarely made.

With ideas so ridiculous, on the origin and diagnosis of diseases, it would seem to follow, that their therapeutics must have been miserable indeed. Nevertheless, we are assured that they were very successful in the choice of remedies, the proper time for their use, and in the manner of preparing and presenting them. They are said to have had an ointment, that caused the cicatrices of variola to disappear. They cured the bites of venomous serpents, with a remedy, whose composition is unknown to Europeans. In health, as in disease, their attention was especially directed to the regimen. They observed in their persons, and in everything about them, a minute and even excessive cleanliness. In short, we find in this country still, as in ancient Egypt, several classes of physicians, each of which treats certain kinds of diseases only. They pretend that their science is derived directly from heaven; and it is

owing to this belief, doubtless, that they have not made any improvements on it, for thousands of years.

### IV. MEDICINE OF THE CHINESE.

The Chinese offer to our observation the unique spectacle, in the records of the human race, of a people who have preserved, for more than four thousand years, their manners, laws, religion, literature, language, name, and territory. This remarkable phenomenon is certainly related to a concourse of extraordinary circumstances, well worthy the attention of the philosopher and statesman; but we can not dwell on this subject especially, as we do not possess the documents necessary thereto.

We simply remark, that in all time, the sovereigns of China have taken extraordinary care to prevent all contact or exchange of ideas between their subjects and foreigners.* Police regulations, customs, superstitions, and national prejudice, have all united to isolate the Chinese from the rest of the world. The language and writing of the mandarins and savans are so difficult, that it requires nearly an entire life to learn them. It is only by force of perseverance in surmounting a thousand obstacles, and braving a thousand dangers, that the intrepid missionaries have been enabled to lift a corner of the vail with which the science and history of this country are enveloped. We owe to their apostolic zeal, the little we have to say on these subjects.†

The antiquity of the Chinese, as that of every nation, is mingled with traditions more or less uncertain and fabulous. But from the year 2357, before Jesus Christ, their chronology, says Father Du Halde, is perfectly well arranged; their tables exhibiting the names of their emperors, the duration and principal events of their reigns, the revolutions, and interregnums; and the whole is narrated in a simple manner, without any admixture of supernatural statements. This chronology is supported, beside, by the observations of eclipses, whose dates coincide exactly with the calculations of the most eminent astronomers of Europe. In fine, Confucius, the greatest Chinese philosopher, a sage

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*But a new era commences; the barriers which have excluded all strangers from entering this empire, have just been broken down by British cannon. The day is not far distant when the learned curiosity of Europeans may be gratified by the study of Chinese monuments.

†The description and history of China, by Father Du Halde; the fragments of Chinese medicine, translated into Latin, by Father Michael Boym, and published by Cleyer, have furnished the materials of nearly all that has been written up to this time on that country.

whose opinion is of great weight, on account of his worth and probity, has never questioned its correctness.

They attribute the invention of Medicine to one of their emperors, named Hoâm-ti, who was the third of the first dynasty. He is said to have reigned 2687 years before the Christian era, which goes back many ages before the universal deluge, to an epoch of which their history does not treat in the same authentic manner as is referred to above. He is regarded as the author of a work entitled *Nuy'Kim'*, which still serves as a guide for medical practice. In this work is found a theory of the pulse, extremely minute, which clearly reminds us of the sphygmics of the successors of Erasistratus. For this reason, it has been supposed, and not without probability, that the disciples of this physician, who were established in Bactriana, after the invasion of Alexander the Great, communicated to the Chinese doctors their ideas on this subject. The chronicles of the mandarins confirm this conjecture, for they state that at that epoch the savans of Samarcand fixed their residence among them. It is, then, very reasonable that Nuy'Kim' is an Apocryphal book, or rather a collection of fragments belonging to various authors of different eras. This is made probable by the following résumé extracted from the articles edited by Cleyer.*

There are set forth in it two radical hidden principles, heat and moisture, which give life and movement to all things. The spirits are the vehicles of heat, just as the blood is the vehicle of moisture. The harmony or disunion of these two principles, their excess or their deficiency, in a word, their combinations and their various proportions, produce that infinite variety of phenomena that are seen in the world. They produce, also, the good and the bad constitution, health and disease, life and death.

An immoderate degree of heat causes cold, and vice versa, just as autumn succeeds summer, and spring succeeds winter.

Heat naturally ascends and occupies the highest places. It is in perpetual agitation by diffusion, expansion, rarefaction, and penetration. Moisture, on the contrary, tends downward, and seeks repose; it becomes condensed and viscid, and stops the pores.

As in the universe, we see three chief objects, the heavens above, the earth beneath, and man, who, placed between these two, participates in the celestial as well as terrestrial nature; so we distinguish in the human body, three principal regions, namely: the superior, extending

* Cleyer, "Specimen Medicæ Siniæ." Francofurti, anno 1682. See, especially, the fragment No. 2, entitled, "Tractatus de Pulsibus."

from the head to the epigastrium, which contains the heart, the pericardium and the lungs, which are all above the diaphragm; the middle, which is bounded below by the umbilicus, and incloses the stomach with its annexes, the spleen, the liver and its gall-bladder, and the diaphragm; lastly, the inferior, which comprehends the kidneys the bladder, the intestines, and the abdominal members.

To each of these three described regions, correspond three kinds of pulse on the hand. The supreme or celestial pulse, which is placed at the articulation of the forearm with the wrist. It is undulating, full, and prominent, and is governed by heat. That on the right arm shows the state of the heart and pericardium; that on the left side, the state of the lungs and mediastinum. The inferior, or terrestrial pulse, situated lower down, at the articulation of the wrist with the hand, is influenced particularly by moisture; on this account it is deep-seated. That on the right side indicates the state of the ureters, the corresponding kidney and small intestine; that on the left side shows the condition of its corresponding kidney and the large intestine. Finally, the middle pulse, or that of man, properly speaking, is between the other two, on the middle of the carpus. It is produced by a mingling of heat and moisture, neither too high nor too low, but properly combined. On the right hand, it marks the state of the stomach and spleen; on the left, that of the liver and diaphragm.

These three kinds of pulse are sometimes compared to a tree, of which the superior pulse constitutes the superior branches and leaves; the middle pulse, the trunk; and the inferior, the roots.

The examination of the pulse, not only enables the Chinese physicians to show the seat of the disease, but also to judge of its duration and gravity. They proceed to this examination after a method which appertains to them alone. They place the arm of the patient on a cushion, then they apply the index, the middle and ring-fingers on the anterior face of his wrist, in such a way that the index-finger may be nearest the arm, and the ring finger nearest the hand. They elevate and depress each finger, alternately, with more or less force, like one playing on an organ. At the same time, they observe closely the movements of respiration, being persuaded that there exists between them and the arterial pulse an intimate connection. They examine, also, during a limited number of respirations, each of the nine pulses, which are formed, according to their doctrine, on each hand, and they deduce from these their diagnosis and prognosis, which they immediately announce without any uncertainty or hesitation. They make their prescriptions on the spot, and usually administer their remedies, receive their fees, and retire, not to return unless they shall be recalled.

Independently of the two active principles of which we have spoken, the Chinese admit five elements, namely: water, wood, fire, earth, and metal. The following is the order in which they are supposed to be produced; water, the source of all fertility, engenders wood or plants; these, when they are dry, inflame and cause fire, or ignited spirits. The remains of the fire, or the ashes, form the earth, which in its turn produces the metals.

The Chinese physicians imagine a multitude of odd connections between the viscera of the human body, the elements, the seasons of the year, the stars, colors, variations of the pulse, and numerous other objects no less dissimilar. We give but one example.

The heart, they say, is analogous to fire, to the planet Mars, to summer, to spring, and to southern climes. It comes from the liver, begets the spleen and the stomach, is antipathic with the kidney, and receives no injurious influence from its contact with the lungs.

The natural pulse of the heart is bounding, like a full swelling wave. Explored lightly with the finger, it appears large and free; but, under a strong pressure, it becomes feeble and fugitive. It has for an antagonist, the deep-seated pulse. During the spring-time, the pulse of the heart is like a tense cord; in summer it is more developed and becomes exuberant; in autumn it appears as if floating; in winter it is rather quiet.

The heart has a predominant influence on the blood, the forehead, the tongue, and the palm of the hands. It is sympathetic with odors, red colors, such as the comb of the cock, and lively, gay sounds, laughing, the exhalation of a roast, bitter taste, and sweat. Excess of joy, heat, inquietude, fixed attention, and bitters, injure the heart and the blood. A black tongue, which cannot be run out of the mouth, and swelling in the palms of the hands, are concomitant signs. Rolling the eyes backward, with a pulse like a floating cord, announce the destruction of that organ.

Some writers have been willing to accord to the Chinese the honor of a knowledge of the circulation of the blood, but we shall see that they mean by this word a phenomenon entirely different from that to which we apply it. They think that the spirits and the blood, both vehicles of heat and vital humidity, run through all parts of the body in twenty-four hours. This diurnal circulation, they say, commences in the lungs, at three o'clock in the morning, and ceases next day at same place, and at the same instant. The knowledge of the canals through which this is effected, constitutes, in the eyes of Chinese physicians, the fullness of anatomical science. They count six canals which pass directly from above downward, and an equal number which return from below

upward; eight run transversely, and fifteen obliquely. The plates that Pleyer has placed in his memoirs, suffice to give an idea of the grotesque manner in which the Chinese represent these imaginary canals, and the principal viscera of the human body.

Such is a summary of the doctrine contained in the Nuy' Kim'. The physicians regard it as an infallible guide, and when they are mistaken in their prognostics, which very frequently happens, far from suspecting, in any respect, the excellency of the precepts of the Nuy' Kim', they rather think that they have not well understood, or not properly followed them.

These physicians relate that one of their ancient emperors directed the dead bodies of criminals to be opened, that the interior arrangement of the body might be studied. This tradition is questionable, for it appears certain that, from time immemorial, the Chinese have not allowed researches on dead bodies, whether of men or animals, which explains their profound ignorance on the structure of our organs, and the long reign of a physico-pathologic system so replete with ridiculous hypotheses and glaring errors. Nevertheless, one of their emperors ordered the translation by the Jesuit Father Parrenin, of the anatomical treatise of Dionis; but this work, though one of the best, previous to the last century, is, up to the present time, a dead letter, a light under the bushel, to the Chinese doctors.*

They divide all diseases into two great classes, accordingly as they attack an organ adjoining the vital center, such as the heart, the lung, the stomach, or an organ separated from the fictitious center, as the kidneys, the bladder, the extremities on the skin. They have, also, multiplied to infinity, the nosological scale. Thus, they count forty-two kinds of variola, distinguished from each other by obscure and insignificant characteristics. They have a variola of the alæ of the nose, and of the circumference of the eyes, one which is characterized by pimples, surrounded by a red circle; others, whose pustules are acuminated or flattened, or black, or transparent, etc.

Notwithstanding the egregious errors of these pathological classifications, and the absurdity of their theories, the physicians of China must have been able to make, in the space of four thousand years, some precious observations on the march, symptoms and prognosis of diseases, and some discoveries of the means for their cure. It is, therefore, probable that there may be found, in their voluminous repositories, as some judicious writers believe, a quantity of useful material, both for the

* Père Dionis was Professor of Anatomy and Surgery at the Jardin du Roi, in 1673.

history and treatment of certain morbid affections.* It is known, for example, that inoculation, by the variolic virus, was generally employed by them a long time before it was known n Europe.

The Chinese appear to have cultivated, particularly, Materia Medica and Pharmacology, if we may judge by the number of works they have written on these subjects. They possess more than forty of them, of which one alone, the most complete of all, is composed of fifty-two quarto volumes. But the extracts that have been made from them, only contain a long enumeration of substances employed in Medicine, without describing the natural characteristics by which they or their preparations might be recognized by us.

There are no apothecaries in that country. The physicians are accustomed to prepare and administer their own remedies. Some of the most distinguished, however, simply give a formula, and leave to others of less rank, the task of executing it. They daily retail in the markets considerable quantities of drugs, and various compositions, which are boasted to have an efficacy against a host of diseases. One of the most famous is the ginseng† root. Incomparable virtues are attributed to it; among others, those of reanimating the vital forces, putting off the infirmities of age, and prolonging the life beyond the ordinary term. The people who believe in its fabulous properties, buy it, literally, with its weight of gold. Their frightful abuse of opiates is also well known.

Having no anatomical knowledge, surgery is uncultivated, so that it may be said that in China this branch of medical science has never passed its infancy. No one dare attempt a bloody operation, however slight. The reduction of hernia is unknown, and a cataract is regarded as beyond the resources of Art; even blood-letting is wholly unpracticed. On the other hand, they frequently employ cups and acupuncture, which they execute with needles of gold or silver; fomentations, plasters of all kinds, lotions, and baths. They make much use of fire, by means of moxas, or red-hot buttons. They have even their magnetizers, whom the author of the "Chinese Letters" compares to the convulsionists of Saint Médard. In a word, their therapeutics, whether internal or external, recalls that of the Europeans during the darkest period of feudal times.

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* See the excellent "Dissertation sur la Médecine des Chinois," by M. Lepage. Paris, 1815, and the article of the Dict. des Sciences Médicales, by M. Bricheteau, sur "Médecine des Chinois."

† See Mérat et Delens, "Dictionnaire Universel de Matière Médicale." Paris, 1831, t. III, p. 356.

Formerly, there existed, at Pekin, imperial schools of Medicine, and no one could then practice Medicine without having served an apprenticeship, and given proof of his capacity. Beside, it is said, there was, for each district of six leagues square, a physician chosen to instruct those who were required to serve the inhabitants of the country. At this time, there is no such organization, every one has the right of selling, prescribing, and administering remedies, without any examination, authorization, or restraint.

How inconceivable is the stupid indifference of a government which requires no guarantee of knowledge or morality on the part of individuals who are every moment the arbiters of the health and the life of their fellows, whose profession renders them the depositories of the most sacred family secrets, by giving them easy access to persons of all sexes, ages, and conditions. It is said that physicians in China are, generally, but little respected, nor do they deserve more consideration, excepting those in whom the profession is hereditary. This deep discredit into which the Art of Healing is fallen, or rather of those who cultivate it, need not astonish us; it is the natural result of the absence of all law regulating the practice of Medicine. The same is true among all nations under analogous circumstances, as this history will prove. We might refer the reader, by anticipation, to the picture that Galen has drawn of the deplorable effects of the medical anarchy which reigned at Rome in his time; we might also refer to the low state of Medicine during the first ages of the feudal period, before the establishment of universities. But, without searching so far back into the annals of the race, it will suffice to place before the eyes of the reader the reflections which such a state of things suggested to the author of the Medical Law of the 19th of March, 1803.

"Men united in society," says Thouret, "have, in all times, been subject to evils growing out of their intercourse, which have often caused philosophers to think that this intercourse itself was more injurious than useful to humanity. The utility of this consolatory Art has been felt among all nations and in all ages. There exists no government which does not render it a favorable support, and which is not interested, more or less, in its progress. Anarchy only, which respects no institution, could ignore the importance of the Healing Art; it belongs to every reformative government to restore to this branch of instruction its ancient splendor and advantageous results. Profoundly penetrated with the necessity of re-establishing order in the exercise of a profession which interests essentially the security of the lives of citizens, the government presents to you a project of a law, having for its object the regulation of the practice of this salutary Art.

"Since the decree of the 18th of August, 1792, which suppressed the universities, faculties, and learned corporations, there is no longer any regulation for the privilege of practice of Medicine or Surgery. The most complete anarchy has taken the place of the former organizations. Those who have studied the Art find themselves confounded with those who have not the least notion of it. The lives of citizens are in the hands of greedy and ignorant men; the most dangerous empiricism, and shameless charlatanism impose, everywhere, upon credulity and good faith. No proof of knowledge and skill is required; the country and cities are equally infested with quacks, who deal out poison and death with an audacity that our present laws can not repress.* The most murderous practices have usurped the place of the principles of the Art of Midwifery. Impudent barbers and bonesetters assume the title of "health officers," to cover their ignorance and greediness. Never has the list of secret remedies, always dangerous, been so extensive as since the suppression of the faculty of Medicine. The evils are so grave and so multiplied, that many mayors have sought a means of remedying them, by establishing a kind of jury, charged with power to examine the men who wish to practice Medicine in the departments. But these local institutions, independently of the variety of tests of qualification that they have adopted, open the door to new abuses, arising from the superficial nature of the examinations, and sometimes from a still more impure source. The Minister of the Interior has been compelled to annul the permits of several mayors, from the abuses and irregularities they connived at. It is, then, urgent to destroy all these evils at once, and to organize a uniform and regular mode of examination and reception for those who wish to devote themselves to the cure of the sick."†

### V. MEDICINE AMONG THE GREEKS DURING THE PRIMITIVE PERIOD.

Greece, which will, hereafter, furnish us the most interesting and best preserved debris of the Healing Art of the ancients, does not give us, in regard to the history of this Science, during the ages that precede the Trojan War, anything more than dim lights and tradition stamped with a fabulous character, and often borrowed from other nations. The learned and modest Daniel Leclerc, details at great length her medical mythology; he names more than thirty gods or goddesses, heroes or heroines, who were supposed to have invented or cultivated, with distinction, some of the branches of Medicine. He interrogates, successively,

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* These remarks are very applicable to most of our state governments.

† "Jurisprudence de la Médecine, de la Chirurgie et de la Pharmacie en France," by Adolphus Trébuchet. Paris, 1834, page 408, etc.

history, poetry, chronicles, and inscriptions; he neglects nothing in the hope of shedding some light on the chaos of improbable or contradictory traditions; but his praiseworthy though unfruitful efforts have not drawn from them any valuable truths, nor well established facts. Sprengel, who undertook the same task, two hundred years later, with germanic patience, has only succeeded in displaying a vast and confused erudition.* It would then be temerity on my part to enter into a labyrinth where men of such great wisdom have lost themselves. I shall content myself by extracting from these fabulous legends a few anecdotes, and some of the best credited names, that have become common knowledge, and which a physician ought to know, or suffer the imputation of ignorance of the history of his Profession.

Melampus is the first of the Greeks, following the chronological order, who immortalized himself by extraordinary cures, and to whom, from gratitude, altars were erected. He lived in the times of Prœtus, king of Argos, nearly two hundred years before the Trojan war. He is said to have cured Iphiclus of impotency, by giving him the rust of iron. But this is difficult to accredit, when we are assured that Iphiclus took part in the Argonautic expedition, one hundred and fifty years later.

The most famous of the cures attributed to Melampus, were those of the daughters of Prœtus. These princesses, who had taken vows of celibacy, became subject to fits of hysteria or monomania, during which, they imagined themselves transformed into cows, and would leave the palace to run wild in the forests, lowing like those animals. This nervous affection was communicated, sympathetically, to other women of Argos, who followed the Prœtides, imitating their deranged conduct. The shepherd, Melampus, having observed that his goats purged themselves by eating white hellebore, gave his young patients milk in which this plant was infused, and then caused some robust young boys to chase them over the fields until they were thoroughly fatigued. Then he enchanted them, and made them bathe in a fountain of Arcadia, called Clitorian, which completed their cure. In pay for so great a service, Prœtus offered to Melampus the hand of one of his daughters with the third of his kingdom. The herdsman showed, on this occasion, as much fraternal affection as medical perspicacity, for he would not accept the offer of the monarch, except on condition that his brother Bias should have a reward equal to his own.

Chiron is less illustrious in the great acts that he performed than in the pupils he reared. He held his school in a grotto in Thessaly, and,

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*See also "l'Histoire de la Chirurgie," commenced by Dujardin, and continued by Peyrilhe. Paris, 1774-1780. 2 vols. in 4to.

if the chronicle may be believed, no philosopher of antiquity, no professor in modern times, could count in his audience as many celebrities as the Centaur saw in his cave. A majority of the heroes who distinguished themselves at the capture of the fleece of gold, or in the Trojan war, boasted of having been his disciples. Among these are enumerated Hercules, Jason, Theseus, Castor and Pollux, the subtle Ulysses, the fiery Diomedes, the prolix Nestor, the pious Eneas, and the invincible Achilles. The hermit, it is said, taught them philosophy, music, astronomy, the military art, political science, and medicine. He cured Phœnix, son of Amyntor, of a blindness supposed to be incurable, and his renown for the treatment of ulcers was so great, that the name of Chironians was given to those which resisted all curative means, and presented a malignant appearance. The etymologists derive the word Centaureus, from Centaur, in order to remain true to the mythological tradition, and doubtless from having no better substitute. Finally, it is said, that this hero or demigod, so skillful in dressing wounds of all kinds, met his death from the wound of an arrow, poisoned by the blood of the hydra of Lerna.

Esculapius, of all the disciples of Chiron, was the most eminent, in a medical point of view. He passed for the son of Apollo, by the nymph Coronis. Several cities of Greece have contended for the honor of his birthplace; but the general opinion is, that he was born at Epidaurus a city of Argolis, where he had a temple and a famous oracle. The twins, Castor and Pollux, were anxious that he should accompany the Argonautic expedition, which shows that he was famous at that epoch, as a physician, or rather, as a surgeon.

The Esculapius of the Hellenists, being of a date posterior to the Hermes of the Egyptians, and these two characters, having between them many traits of resemblance, certain authors have thought that the latter might probably only be a copy of the former. They have denied the individuality of the god of Epidaurus, and have accused him of being a twin brother of his colleague of Memphis. Leclerc, after having deeply studied this grave question, in every respect, has not dared to decide it. My views correspond with his.

However this may be, Esculapius obtained in antiquity, nearly a universal veneration. His worship, which passed from the Greeks to the Romans, extended into all countries, penetrated by the arms of these two nations. We shall speak elsewhere of the principal temples erected to his honor, of the priests that were connected with them, and the progress they made in Medical Science. For the present, we shall content ourselves with relating some of the cures attributed to him, and

glance at the opinions of the ancients, relative to his manner of treating diseases.

It is said he brought from death to life, Hippolytus, son of Theseus, a Capaneus, a Lycurgus, an Eryphile, and many others. Pluto, god of Hell, alarmed to see the number of new arrivals to his gloomy kingdom, diminishing day by day—complained to Jupiter, who destroyed the audacious healer. On this account says a wit, the modern children of Esculapius abstain from performing prodigies. But the witty writer forgot, that there has always existed, and now exists, a class of self-styled physicians, who have never ceased to perform miracles. They are called, according to circumstances, charlatans, quacks, theosophs, thaumaturgs, etc. Such were, among others, Asclepiades of Bithynia, who resuscitated a corpse, in a public place in Rome, in open day; Paracelsus, who boasted of keeping in a vial, a living little man, manufactured by himself; Robert Fludd, the oracle of modern theosophs; Mesmer, the magnetizer, and their adepts.

In regard to the method which Esculapius followed, in the treatment of diseases, as well as to all else relating to this god, we possess no documents, entitled to much credit. The poet Pindar, who lived seven or eight hundred years later, is the first to describe it in the following terms: "Esculapius," says he, "cured the ulcers, wounds, fevers and pains of all who applied to him, by enchantments, calming potions, incisions, and by external applications."*

The greatest number of writers, after the Bœotian poet, such as Galen, Plutarch, Pausanias, Pliny and others, have reiterated the same views. Plato, comparing the practice of Esculapius, with that of his cotemporaries, gives the preference to the former, for reasons which deserve to be reported.

In the third dialogue on the republic, Socrates, when interrogated by Glaucus, responds as follows:

"Is it not a shameful thing to be compelled to call upon a physician, not for the cure of wounds, or the diseases of the seasons; but for such as are produced by the indulgent life I have described, which fills us with humors and unhealthy vapors, like swamps; thus obliging the worthy sons of Esculapius, to invent such new names, as catarrhs, fluxions, etc."

"Indeed, Socrates, these are new and extraordinary names of diseases."

"Yes! such as did not exist in the times of Esculapius, I think, and what leads me to believe it, is, that his sons (Machaon and Podalirius),

* Third Pythian Ode.

during the siege of Troy, did not blame the women who gave as a beverage to the wounded Eurypylus, Pramnian wine, upon which she had sprinkled flour and grated cheese, both of which have an inflammatory tendency; nor Patroclus, who cured wounds with herbs."

"It was strange, nevertheless, to give that beverage to a wounded man."

"It was not, if you reflect that before Herodicus, the art of treating and curing diseases, as is now attempted, was not put in practice, by the disciples of Esculapius. Herodicus was the master of a Gymnasium; becoming a valetudinarian, he combined gymnastics and medicine, by which combination he tormented himself, and many others after him."

"In what way?"

"By producing a slow death, for as his disease was mortal, he followed it step by step, without being able to cure it, and neglecting everything else to take care of himself. Distressed by anxieties, if he varied ever so little from his regimen, by force of art he reached old age, by a life of real agony."

"His art rendered him an excellent service!"

"He well merited it, for not having seen, that if Esculapius did not teach to his descendants that system of Medicine, it was neither from ignorance, or defect of understanding, but because he knew, that in every well-ordered government, each citizen has a task to fulfill, and that no one has leisure to pass his life in sickness, and in taking care of himself. If we see the absurdity of this method, for artisans, we see it none the less for the rich, and the pretended happy of the world."

"Explain yourself?"

"Let a carpenter be sick, he is benefited by a physician, who relieves him by a vomit or a purge, or rids him of his disease by fire or steel, but if one comes to him and prescribes a long regimen, enveloping his head in cloths, and other similar treatments, he very soon must say, that he has no time to be sick, and that there is no advantage in living thus, occupying himself with his disease, and neglecting his labor which awaits him. He says, away with such medical treatment, and resuming his ordinary style of living, recovers his health, and goes to work again; or, if his system can not resist the disease, death comes in to relieve him from his embarrassment. These are, according to my opinion, the considerations that led Esculapius to prescribe a treatment, suitable only for the diseases of persons of strong constitutions, and good habits; and to limit his remedies to potions and incisions, without changing their manner of living, wishing not to harm society. But in regard to those radically unsound, he was not willing to assume the responsibility of prolonging their lives and sufferings, by injections or ejections, given according

to circumstances, and thus put them in a condition, to beget other beings, destined most likely to inherit their diseases. He thought that it was not required to treat those who could not fulfill the career marked out by nature, because it was neither advantageous to themselves, nor to the state."

"You make a politician of Esculapius."

"It was evident that he was one, and his children furnish the proof of it; for while they fought with intrepidity under the walls of Troy, they practiced Medicine, as I have just stated."*

The above argument, tending to prove that Medical Science must not be occupied with valetudinarians or individuals of a debilitated constitution, is destroyed by the simple remark of one of the interlocutors, "You make a politician of Esculapius." It is certainly wrong in Socrates, or Plato, as explained by him, to desire that the physician sacrifice the sentiments of his nature, and the right of suffering humanity, to the exigencies of an unpitying political economy. No, whatever this sage may say, a physician must not ask himself, if the preservation of the individual who claims his services is likely to be burdensome or useful to the State. In ancient republics, such atrocious patriotism was praised, but modern civilization repudiates it. It does not permit the physician to consider any such question in regard to his patients; he must do all he can for them.

Such is the view that the medical corps of France has held of its duties, under all phases of our internal dissensions. A striking proof of this has been given but very recently. It may be remembered that, at the close of one of the bloody contests in the capital, which took place during the first years of the reign of Louis-Philippe, a chief of police endeavored to force the physicians to tell the names of the wounded whom they attended. The magistrate thought this an honest way of discovering the enemies of the government; but the public, as well as the medical corps, saw in this a shameful abuse of confidence, the espionage hiding itself in the cloak of the minister of benevolence.

Policy was obliged to bend before the *morale*, and this is not one of the least glories of our epoch. This would not have taken place in the time of Plato, for the opinion which we combat here, and of which the philosopher has made himself the echo, appertains much less to him than to his age, it reigned in all the ancient republics prior to the advent of Christianity.

Machaon and Podalirius touched the limits that separate mythology from history; these two personages participate in this double charac-

* De la Republic, Book III, translation of M. Cousin, p. 167, et suiv.

ter; their biography is a mixture of fabulous and probable narrations. Their existence, for example, can not be considered doubtful, for the Homeric songs, and other ancient writings, agree in representing them as valiant captains and skillful physicians, who took an active part in the siege of Troy, but the statement of their genealogy does not inspire us with the same confidence. They are said to be the sons of Esculapius, and we know that the reality of this famous individual is exceedingly problematical. Beside, the words, children of Esculapius, are often employed figuratively by ancient authors, to designate men who devoted themselves to the medical profession.

Machaon was regarded as the elder of the two brothers. He treated Menelaus, when that prince was treacherously wounded by Pindar. He cured, also, Philoctetes, who was lame from a wound which he inflicted upon himself, by letting fall upon his foot one of the arrows of Hercules. This illustrious surgeon met his death in a singular combat under the walls of Troy.

Podalirius survived him, and assisted in the ruin of the kingdom of Priam, but on his return he was cast by a tempest on the shore of Caria. A shepherd rescued him, and learning that he was a physician, he conducted him to Dametus, the king of the country, whose daughter had lately, accidentally, fallen from the top of the house. She was insensible and motionless, and the attendants already supposed her dead, but this skillful surgeon bled her from both arms, and had the happiness of restoring her life.

Here is the first example of bleeding practiced for the purpose of a cure; unhappily, it is not very authentic. Stephen, of Byzance, who reports it, wrote in the fifth century, nearly 1600 years after the event, and he does not indicate the source whence he obtained it. However, the habit of bloodletting goes back far beyond the era of Hippocrates, for he speaks of it, in several places, as a common practice in his time.

The other members of the family of Esculapius are all fictitious beings, whose symbolical names only remind us of some attribute in Medicine. Thus, the name of Epion, his wife, is derived from a Greek word, which signifies to quiet; those of Hygeia and Panacea, his daughters, express, the one health, and the other, a remedy for all diseases.

Moreover, many of the gods and goddesses of Olympus assumed the honor of fulfilling some medical function. Apollo, or Phœbus, the father of Esculapius, usurped nearly everything. Under the name of Pæon, he assumed the privilege of exciting or appeasing epidemics. It is well known that Juno presided at accouchements, and took at those times the surnames of Lucina, Ilithyia, or Natalis. In short, by the

ingenious connection of many passages in the Iliad and the Odyssey, M. Malgaigne indicates that Apollo was considered as the author of all the natural deaths among men, and Diana of those among women.

At an epoch when yet the earliest inhabitants of Greece, called Pelages, lived on the acorns of their forests, and were covered with the skins of wild beasts, making their homes in caves; Egypt, Phenicia, and Chaldea already rejoiced in the blessings of an advanced civilization. The emigration of successive parties from Sais, Tyre, and Memphis, carried to the hellenic peninsula the germs of the arts and sciences. Inachus, the victim of a revolution, conducted to Greece the first Egyptian colony, and laid the foundation of the city of Argos, 1856 years before Christ. Several ages later, Cecrops, obliged to fly from the banks of the Nile, landed on the shores of Attica, and became the founder of Athens, which he consecrated to Minerva. Cadmus came from Tyre with a company of Phenicians, and established himself in Bœotia. He built the walls of Thebes, which citadel bore his name.

The major part of the aborigines embraced, either from taste or compulsion, the habits of civilized life, and adopted the worship and laws of the new comers, while a certain number, still preferring the independence and idleness of a nomadic life, formed themselves into wandering bands that devastated the country, driving off the flocks, and despoiling and murdering travelers. The founders of the new colonies made a war of extermination, and the first men who signalized themselves by victories over the chiefs of the brigands, or the savage monsters of the wild country, were considered as heroes, and benefactors of humanity. Gratitude mingled their praise with that of the gods. Gradually the recollection of these events became dim, because the narrations were not committed to writing. The adventures of these earthly heroes were confounded with those of the gods imported from foreign countries. Names and dates were mingled together, and the national vanity gratified itself in giving Greek origin to both, and in transferring the theater of all the celebrated events, and great discoveries, to the hellenic territory. The earliest chroniclers appearing a long time afterward, made no effort to go back to the source of the traditions, and clear up their obscurity, by comparing them with each other; they only made themselves the echoes of popular belief. This is the reason why the mythology of the Greeks, although sufficiently modern, offers as much uncertainty and obscurity as that of nations much more ancient.

## CHAPTER II.

### MEDICINES OF SOME OTHER NATIONS OF THE OLD AND NEW WORLD.

The history of other nations offers nothing peculiarly remarkable, in a medical point of view. All that can be affirmed of each one of them is, that just as far as we can go back in their annals, we always find some vestiges of Medicine. Thus, Hippocrates mentions certain medical practices, in use among the Scythians. We have stated before the practice of the Portuguese and Babylonians, of exposing the sick before the doors of the houses, in order that passers-by might give them their advice. In short, we also know, that in Gaul and in the Britannic isles, the Druids were at the same time priests, legislators and physicians, and that their women shared with them their offices and prerogatives.

In the New World, the same phenomena are produced among a people, who have had no species of communication with the inhabitants of the Old World. Antonio de Solis states, that Montezuma, emperor of Mexico, possessed gardens, where great numbers of plants were cultivated, whose properties were well-known to the physicians of the country, who employed them with success. Cortez having been attacked with a grave disease, assembled a council of the most skillful native physicians, who employed various remedies, and in a short time restored the eminent patient to health. In the island of St. Domingo, the priests named *butios*, were both physicians and apothecaries. Among the Apalachicolas, a tribe in Florida, the sacrificers to the sun, practiced Medicine, to the exclusion of other castes. Finally, now that all parts of the globe have been explored, we are able to repeat with assurance, that sentence of the elder Pliny, which says, "no nation has existed, entirely destitute of Medicine, though some may be found, that have had no men, especially occupied as physicians."

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## CHAPTER III.

### THE ORIGIN OF MEDICINE.

If we should be asked, what has taught men to provide themselves with things indispensable to life; to prepare their food and clothing, and habitations against the inclemencies of the seasons, etc.; our unembarrassed and prompt reply would be: it is necessity, it is the instinct

of preservation. Again, if we are asked, what has inspired the same men to aversion for pain, the fear of disease and death, the desire to prevent sickness, not only for themselves, but also for all those that are dear to them; we should again promptly and readily answer, it is a natural, irresistible instinct, which is realized by the savage of the wilderness, as well as by the inhabitants of cities; by the poor, as well as by the rich—by the philosopher and ignorant; in the frozen regions of the north, as well as under the burning heats of the tropics. There is but one step between this instinct and the invention of Medicine; and we shall proceed to see how this has been achieved. This will be comparatively an easy task, as we possess one of the most ancient books, which furnishes on this subject, very positive and explicit testimony; it will be sufficient to make a textual extract.

"Necessity itself," says the author, "forced men to seek the invention of the Medical Art, for they saw as well as we do now, that the regimen proper in health, is injurious in sickness. Moreover, in going back into past ages, I think that the kind of life and nutrition in vogue now-a-days, would not have been discovered, if man, for his drink and food, could have employed that which is used by the ox, the horse, and all other animals of an inferior order, namely, the simple productions of the earth, fruits, herbs and grass. Animals are nourished by these, and grow and live without any inconvenience. Doubtless in the earliest times, man had no other nourishment, and that which he employs at present, seems to be an invention that has been elaborated during a long course of years; for rude and coarse diet must have caused much violent suffering, just as is realized now, from a similar alimentation. Those who make use of such crude and undigestible materials for food, are subject to pains, diseases and sudden death. But the people of those times, being habituated to it, doubtless suffered less than we suffer; nevertheless, the evil was great, even for them; and many, especially those of a feeble constitution, must have perished. Such, it seems to me, was the cause of men seeking food, more in harmony with our nature; which led to the discovery of that which is now employed.

"The men who sought and discovered the Art of Medicine, having the same ideas as those of whom I have spoken above, did I presume, when not feeling well, withdraw something from their accustomed food; and in place of a full diet, directed the sick to eat less. It happened that this regimen was sufficient to arrest diseases in some persons, not in all, however; for some of them, were in such a state, that they could not be relieved, even by the use of a smaller quantity of their usual food. Then it was suggested to prescribe a weaker diet, and soup was invented, in which a small quantity of solid substance, is mingled with much

water, and well diffused by boiling. Finally, those who could not even support soup, were supplied with simple drinks; care being taken to give them neither too much nor too little.

"Did not he then, who in the opinion of all was called a physician, who discovered the dietary of the sick, follow precisely the same course, as he who changed the savage and brutal manner of living of the earliest men, by substituting a diet more like ours? In my opinion their method was the same and the discoveries identical."*

This explanation, of remarkable simplicity and exactness, shows us how men were gradually led to lay the foundations of Medicine. It sufficed them to observe that certain things were good, and others bad, so that the former might be employed, but the latter abstained from. Thus, as the application of a hot cataplasm on the side soothes the pain of pleurodynia, in Thrasimenus; it was naturally supposed that the same remedy would relieve Eurimedon of a similar trouble; so a venesection, having cured the daughter of Damatia, deprived of consciousness by a fall from the roof, it was concluded that all similar cases should be treated in a like manner. The reasoning under these circumstances was very simple; no inquiry was made as to the mode of cure by the remedy, it was sufficient to show that they were cured, in order to feel authorized to apply the same treatment to analogous cases. Observation and memory then, which constitute experience, were the principal faculties put in exercise; reason entered very little into their therapeutical considerations. Such was the first step of the human mind, in the Medical career; it consisted in substituting the lights of experience for the brute suggestions of instinct, a substitution rational and advantageous, as we shall demonstrate hereafter.

## CHAPTER IV.

### THE UTILITY OF MEDICINE DURING THE PRIMITIVE PERIOD.

Those who boast of the certainty and perspicacity of instinct—those who wish that man, in imitation of animals, followed only his appetites in health and disease; have never reflected on the daily and often fatal errors of the appetites uncontrolled. It will suffice to give them some examples to unprejudice their minds, and convince the reader, that the lights of experience are less faulty than our instinctive tastes, especially among the sick.

* Works of Hippocrates, translation by M. Littré. Traité de l'Ancienne Médecine.

1. Let a traveler, after a long walk under an ardent sun, covered with dust and sweat, and dying of thirst, come to the side of a cool and limpid spring; instinct would lead him to take long, deep draughts of its waters; but woe to him if he does not resist the temptation. It is not necessary in this place, to recall the example of Alexander the Great, arrested in the midst of his triumphant career, for having yielded to a similar temptation, to bathe in the waves of the Cydnus. No one reaches the years of discretion, without knowing, either by personal experience, or the hearsay of others, how dangerous such conduct is, and how fatal it has been in many instances.

2. A miserable shipwrecked sailor, who has endured the torment of hunger for many days, is finally rescued by a vessel fully provisioned. Do you suppose that the commander of that ship, would allow him to eat and drink to full satisfaction? No, certainly, for it would cause the speedy death of the unfortunate sufferer; the blind and imperious cravings of his appetite, would permit only a partial gratification.

3. A woman in labor, is attacked either with hemorrhage, or convulsions, or her child has a bad presentation. Would you abandon this accouchement entirely to the resources of nature? There is much reason to fear, that under such circumstances, the mother or the child, or even both would succumb, if Art comes not to their relief; but by a simple and painless maneuver, the skillful accoucheur will, in most cases, save the lives of both.

4. Let an individual be attacked with an intermittent fever; instinct suggests to him to employ much covering, during the cold stage, and cast it off during the fever; and quench his burning thirst with copious draughts of water. The paroxysm passed, he resumes his ordinary life without any precaution, because he is sensible of no change in his condition, except a slight diminution of strength and appetite. During each paroxysm, his instinct suggests only a repetition of the same acts. Now what will be the result?

If the attack is mild, the climate healthy, and the patient have a good constitution, he will recover by the efforts of nature alone, after a few repetitions of the paroxysm; but in most cases, one or more of these favorable conditions are wanting, then the scene is changed, and the results are very different. Sometimes the subject succumbs in a few days; at others, the fever assumes a remitting type, and goes on indefinitely, producing at length, visceral congestions, chronic inflammations, and incurable degeneration of organs; in fine, in cases less severe, the subject has a slow convalescence, and is for a long time, incapable of active labor. Thanks to the progress of science, these

sort of affections, formerly so common and disastrous, are now rarer, and much less formidable.

5. A man has a luxation of his arm, or a fracture of his leg; what does his instinct counsel? To keep it in such repose, as prevents any movement of the injured member, because the slightest motion excites severe pain; but experience teaches us, that unless he will submit to the momentary increase of pain, which the manipulations of his surgeon will cause in his efforts to adjust it, he will infallibly lose the use of his member, and very probably too, endure a great amount of subsequent suffering.

In a multitude of cases more, it could be shown that the suggestions of instinct are faulty and pernicious. After having proved a thousand times the danger of following so untrue a guide, a surer method was sought in the lessons of experience.

The first discoveries that were made on this plan, appeared so admirable and useful, that they were conceived to be a divine inspiration, and those who were regarded as the inventors and propagators, received divine honors. Thus we see, there was a real progress, an efficient amelioration, by adding the lights of experience to the brute suggestions of instinct—in passing from the state of simple nature, to that of the commencement of medical science. It belonged to history and medical philosophy to establish this fact, which sanctions and justifies these early efforts of the race, to lay the foundation of the Healing Art. Thus a serious examination, refutes the eloquent declamations of those philosophers who propose to us, to make the animals our models; proclaiming continually the unfailing sagacity of instinct; and so, also, is swept away the apparent wisdom of the following words of J. J. Rousseau, put in the mouth of his pupil; "If I become sick," says Emilius, in a letter to Sophia, "a very rare circumstance in a man of my temperament, who indulges in no excess of food or care, or labor or rest, do not torment me with efforts to cure me, nor frighten me to death. The young animal that is sick, rests in one place, gets well, or dies: I would do likewise, and I should be the better by it."*

The grave philosopher of Geneva had never reflected, it is reasonable to suppose, on the serious inconveniences of that method, in an infinite number of cases; among those cited above, there are several in which it would have been fatal.

To his authority, we are able to oppose that of another philosopher, who was his cotemporary, and no less celebrated than himself. "It is admitted," says Voltaire, "that a good physician may save our lives in a

* Traité de l'Education. 2de Lettre d'Emile à Sophie.

hundred cases, and restore to us the use of our members. A man falls with apoplexy: it will not be a captain of infantry, nor a counselor of state that will cure him; cataracts form in my eyes: my neighbor can not remove them. I make no distinction here between the physician and the surgeon; the two professions have been inseparable for a long time. Men who would occupy themselves with studies and efforts to give health to other men, from the sole principles of humanity, should be considered far above the grand of the world; they were kindred to divinity. To preserve and repair, is nearly as admirable as to create. The Roman people were satisfied to remain five hundred years without physicians. That people only occupied themselves with killing, and made no efforts to save life. What became of those who had a putrid fever, an anal fistula, a carbuncle, or an inflammation of the lungs? They died.*

But the greater number of the detractors of Medicine, do not deny in an absolute manner, the utility of the Art, in a thousand instances; they do not contest, for example, the utility of certain surgical operations, nor the regimen in acute diseases; but they reject in general, scientific Medicine, Medicine as an Art. Thus the elder Cato pursued with his ordinary obstinacy, the philosophers, rhetoricians and physicians of Greece, whom he accused of corrupting the manners of the Romans, and he finally succeeded in obtaining a decree for their expulsion; but notwithstanding all his efforts, the physicians were excepted in the decree. This same Cato wrote a work on domestic and veterinary Medicine; he treated the men of his household and his animals with remedies prepared by his own hands, and report says, that his wife fell a victim to his prejudices in Medicine. The encyclopedist Pliny, who wrote a materia medica entirely drawn from Greek authors, did not dissimulate any more, the sentiment of profound jealousy that he felt, on account of the superiority of that nation in science and letters. He declaimed against foreign physicians with a blind violence, that led him even to proscribe the use of exotic plants.

At this point naturally belongs the relation of an anecdote, which I once heard told of an old doctor, which I will endeavor to state in his own words. "I was one day," says the worthy practitioner, "at the house of one of my patients, who had recovered from a rather severe attack of illnesss, when an inhabitant of the neighborhood, who had lately come from Paris, called to pay him a visit. After the first compliments the conversation fell, as is usual in such cases, on medicine and physicians. 'As for me,' said the provincial, 'I have no faith in Medicine;

* Dictionnaire Philosophique.

I believe that one would recover just as well without, as with it. But then, I have never had a serious attack of sickness.' Your incredulity, then, I replied, arises from that condition, and you will do well to maintain it. 'I speak only for myself,' added our provincial, 'for, as to others, I am the first to administer remedies to them. As I dwell in the country, far from the residence of all physicians, I have in my house a little pharmacy, which I am careful to keep supplied, and when one of my family or a neighbor falls sick, I always give them the first aid; and often I effect a cure, before the arrival of the doctor.' But then, said I, you do prepare some medicines, and probably have some little faith in them. 'Oh, doubtless, said the countryman, I have faith in my medicines, because they are so very simple and natural, as I employ neither strong remedies nor instruments.'"

What difference then is there, between the practice of Cato, the censor; of Pliny the naturalist; of our rustic citizen, and that of the physicians of their times; or to speak more generally, what difference is there between the practice of laymen, and that of men of science? This only: the former are ignorant and timid; the latter are relatively more enlightened, firmer, and consequently more efficacious.

There is another class of unbelievers in Medicine whom we should pity more than blame; I mean those persons who are suffering from incurable diseases, and have exhausted all the resources of cotemporaneous science, without obtaining any notable advantage. Such was the case with our skeptic Montaigne, who, afflicted with a urinary calculus, at an epoch, when surgery, impotent by ignorance, dared not attempt the operation of Lithotomy, gave vent to his spite in epigrams against the Art. Alas, whatever may be done, whatever perfection this Art may attain, there are, and there always will be, cases in which its aid will be inefficacious, and then the patient who demands of us relief for his suffering, who asks of us life, however inexorable may be the law which condemns him to suffer and to die, seeing the impossibility of our aiding him, will accuse us of this inevitable result; and will declaim against us, unless he be endowed with a lofty philosophy, or profound resignation.

## RESUME OF THE PRIMITIVE PERIOD.

We have seen that the first notions of Medicine go back to the earliest infancy of society, in all the countries of the world; so that we may repeat the statement of Pliny, that if there exists any nation which, at any epoch of its history, was without physicians, there is not one in which we do not find some vestiges of Medicine. We conclude from this, in opposition to Plato, and some other philosophers, that the first

elements of the Healing Art are not at all the result of the degeneration of human nature, brought about by softness and luxury; but that they spring from that natural instinct, which makes a man fly from danger and death, and sympathize with the afflictions of his fellows.

We have, therefore, endeavored to penetrate further than has been done, up to this time, into the workings of the human mind, by which the first materials of medical science were developed, and we have found that this process consists, principally, in the addition of the lights of experience to the brute impulses of instinct. In fine, having sought to appreciate the results of that antique revolution, we have established, by a severe analysis, that the results have been advantageous to humanity. We now proceed to follow science through a new phase; we shall behold it expand, from its beginning, by successive development, as a river swells and grows broader from its origin, by the tribute of its branches. We shall have to notice more than once, the errors and abuses which have disturbed, diverted, and sometimes turned it backward in its course; but let come what will, in the labyrinth of contradictory opinions into which we must plunge, we shall take for our motto, that of the Déontologie Médicale, of Dr. Max. Simon: "*Truth in Science, and Morality in Art.*"*

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* See the dedication of that work.

# II. MYSTICAL PERIOD.

COMPRISING A SPACE OF TIME EXTENDING FROM THE TROJAN WAR, B. C. 1184, TO THE DISSOLUTION OF THE PYTHAGOREAN SOCIETY, B. C. 500.

## GENERAL CONSIDERATIONS.

The Trojan war, celebrated in the Songs of Homer, appears in Greek antiquity as a luminous point in the midst of profound darkness. Before this memorable expedition, and for a long time afterward, the history of Medicine rests on uncertain traditions, often mingled with fables. The hellenic nation, which was one day to become the instructress of the human race, had not yet shaken off the rust of barbarism. Egypt, Phenicia, and Chaldea, marched at the head of civilized nations.

But after the Grecian chiefs had overturned the throne of Priam, and destroyed his capital, the freedom of the seas was attained. Their vessels could cruise, unmolested, from Palus-Mœotidus to the Straits of Gibraltar. After that event, the Hellenists covered, with their colonies, the coasts of Asia-Minor, the isles of the Archipelago, and the south of Italy. They sent emigrants as far as Gallia, Spain, and the shores of Africa. Their navigators dared even to pass the pillars of Hercules, and adventure upon the ocean.

It was not solely the desire of riches and power, that caused them to undertake long peregrinations; a more noble sentiment, the love of wisdom, or of science, animated some of these travelers. They are seen renouncing their families and friends for a great number of years, and returning afterward to share freely with their fellow-citizens the treasures of light they had amassed in foreign lands. Thus, a Lycurgus and a Solon were worthy to give laws to their country, and place in the constitutions, which are still admired, the foundation of the grandeur of Sparta and Athens. So a Thales, a Pythagoras, and a Democritus, became the chiefs of schools, or of sects, which shed upon their names so much glory.

Nevertheless, science and letters had advanced but very slowly, in Greece, during the space of seven hundred years, which separates the Trojan war from the dispersion of the Pythagoreans. A very small

number of men devoted themselves to the study of the liberal arts, and, with the exception of the poems of Hesiod and Homer, there remains to us no literary monument of that long period. Medicine shared the fate of the other sciences; buried in the depths of the temples of Esculapius, it made an unseen progress, which it is impossible for the historian to trace.

## CHAPTER I.

### THE PRACTICE OF MEDICINE IN THE TEMPLES.

Fifty years after the destruction of the kingdom of Priam, there was elevated at Titanus, a city of the Peleponnesus, the first temple in honor of Esculapius. Very soon the worship of this god was spread throughout Greece, whence it passed into Asia, Africa, and Italy. Among a multitude of temples which were consecrated to him, those at Epidaurus, in the Peleponnesus, at Pergamus, in Asia, on the island of Cos, and at Cyrene, a city of Lybia, are particularly remarkable.

In the temple at Epidaurus, there was a statue of colossal size, representing the god of Medicine under the figure of an old man seated on a throne, holding in one hand a scepter, and resting the other on the head of an enormous serpent. A dog, an emblem of vigilance, reposed at his feet. This statue, made of gold and ivory, was the work of Trasymedus. Socrates, in his last discourse with his friends, requested them to offer a cock, as a sacrifice for him, to Esculapius; whence we infer that this bird was sacred to the god of Medicine.*

The priests attached to his worship were named Asclepiadæ, a word which signifies descendants of Esculapias. They formed a particular caste, governed by sacred laws, like the priests of Egypt. One of their ancient laws said, "that it is not permitted to reveal sacred things, except to the elect, and strangers must be admitted to this knowledge only after having submitted to the tests of initiation."

The temples of the god of Medicine were generally very salubriously situated; sometimes on the summit of a hill, or the declivity of a mountain; sometimes on the shore, somewhat distant from the sea, and near to a thermal spring, or fountain of living water. Groves of trees refreshed the sight of the sick, and afforded to them cool and solitary retreats in their beautiful and spacious avenues.

* Dialogues of Plato, the Phedon.

The people came from all quarters on pilgrimages to these places, sacred to the god of Medicine. The sick and the convalescent found there, both agreeable and healthful diversions. The wholesome regimen to which they were subjected; the pure and temperate air they breathed; the faith and hope by which some of them were animated; the miraculous cures that were testified to, all united to affect their minds agreeably, and exercise a happy influence on their constitution.

Beside these hygienic means, the Asclepiadæ employed special remedies appropriate to each disease, according to the notions they then had of it. They prescribed according to circumstances, venesection, purgation, vomits, friction, sea-bathing and mineral waters; in a word they neglected none of the therapeutical means they possessed in those times.

Knowing the great influence of the *morale* on the *physique*, these priest-doctors employed every means to control the imagination of their patients. These were not permitted to interrogate the oracle, until they were purified by abstinence, fasting, prayers and sacrifices. When all these purifications were accomplished, the consultants were introduced to receive the response of the oracle. Sometimes they were obliged to lie in the temple for one or more nights. Sometimes the god spoke in a mysterious manner, without showing himself to the eyes of the faithful; sometimes he appeared to them under the form of a serpent, devouring the cakes on the altar; again, he manifested his will in dreams, which were interpreted by the priests.

The patients who recovered, went to their homes blessing the divine author of their recovery, and leaving behind them testimonials of their gratitude. Those who received no beneficial nor favorable response, believing that their offerings were rejected, because insufficient, redoubled their zeal and their liberality. So that bad as well as good results added equally to the glory of the god, and the profit of his ministers.

There existed in the country about Epidaurus, and in various other localities, serpents of a yellowish-brown color, whose bite was not venemous, and which were easily tamed. The priests employed them in those supernatural performances which filled the people with astonishment and superstition. Aurelius Victor relates, "that during the year 350 of the foundation of Rome, the city was ravaged by a terrible pestilence; the Senate sent six deputies to consult the oracle of Epidaurus. After they had arrived at the temple, and were admiring the colossal statue of the god, suddenly, an enmorous serpent issued from beneath the pedestal. The sight of it impressed every mind more with veneration than terror. He moved tranquilly through the astonished crowd and entered the vase of the Romans, in the chamber of Ogulnius, the chief of the embassadors.

"The sacred reptile was piously borne away, and when the vessel of the embassadors was approaching the city of Romulus, he sprang into the waves and swam to an island in the Tiber. A temple was immediately erected to Esculapius, on that spot, and the pestilence ceased."

Many other grave historians of antiquity, report the prodigies effected by the intervention of the god of Medicine. Nevertheless, every one did not credit them, as witness the testimony of the valet to whom Aristophanes in one of his comedies, attributes the following language: "The Priests of the temple of Esculapius, after having extinguished all the lights, told us to go to sleep, adding, that if any one should hear a hissing, which indicated the arrival of the god, he should not move in the slightest manner. So we all laid down without making any noise; but I could not sleep, because the odor of an excellent broth, that an old woman held near me, agreeably excited my olfactories. Desiring most ardently to slide along to it, I raised my head very quietly, and saw the sacristan, who took away the cakes and figs from off the sacred tables, going the round of the altars, putting into his sack everything he could find. I believed that I had a right to follow his example, so I raised to go to the old woman's pot."

## CHAPTER II.

### OF DREAMS.

All antiquity has had faith in dreams, prophets and philosophers—strong and weak minds, all believed that the Divinity employed these means to reveal the future and instruct us in his designs. Sacred and profane history are full of examples that attest the universality of this sentiment. It is, then, more than probable that the Asclepiadæ shared in it, and, moreover, as it was advantageous to them, they must have tried to maintain this belief, by pious frauds. Thus, while they endeavored to draw from dreams some natural indication, they affected to consider them also as a divine manifestation, above the laws of nature. In all ages, the signs furnished during the sleep of the sick, have been profitably studied in a semiotic point of view; and in this sense, dreams have an importance, which was, doubtless, very much exaggerated by the ancients, but has been too much neglected by moderns.

My readers, I think, will not be displeased to find here some extracts from one of the most ancient treatises that exists on this subject.

"Whoever," says the author of this book, "desires to know the inferences that may be drawn from dreams, will find, in the first place, that they are closely related to what has transpired during the previous day. The soul, during sleep, is untrammeled; but while it is distracted by its service to the body, its existence is, as it were, divided; it is not entirely itself, but belonging, in part, to the bodily wants, it subserves the senses, as sight, hearing, touch, and the faculty of voluntary movements; it directs the various operations of business; in short, it gives aid to every act of the body requiring thought, which prevents it, in some degree, from enjoying its own innate reflections.

"When the body is asleep, the soul visits every part of this her habitation, and regulates all its various functions. The body is then unconscious, but the soul is awake, it possesses all its intelligence, it sees visible things, it hears sounds, it feels, it moves, it is pained and irritated. In brief, the soul during sleep, performs everything that relates to the body and the soul, and wisdom is largely possessed by him who is able thus to comprehend it.

"We see persons much occupied with this art, who pretend to understand and explain dreams sent by the gods to announce beforehand, the good and the evil with which cities or persons are menaced. Sometimes they are correct, at others they are mistaken; but no one knows why it is so.

"They say there is something to be done to guarantee persons or places against certain evils, but not knowing really what, prayers to the gods are prescribed. It is, doubtless, good to pray to the gods; it is always apropos; but it is necessary also, for a person to concur with the divinity, and endeavor to help himself while invoking his aid."*

We remark, first, that the author of the passages just quoted does not deny the possibility of dreams being sent by the gods, but he questions the art of those who pretend to interpret them. He judiciously observes that these persons happen sometimes to be right, and at others are mistaken; that is, that the event sometimes justifies their prediction, and sometimes contradicts it, without any one knowing how or why.

He gives a theory of dreams, which he thinks is perfectly natural and which may be summed up as follows: the soul, or the vital principle, or to use the language of anatomists, the encephalic organ, being free from external distractions during sleep, perceives much better the sensations that proceed from the viscera, and manifests them more distinctly. This is a theory which we may find to be contrary to observation, but which, at first sight, is neither absurd nor unreasonable.

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* "Œuvres Hippocratiques," Gardeil, t. III—Songes, § 1.

Unhappily, the author of it does not exhibit the same spirit of wisdom in the applications he makes of it. He gives as the true results of observations, the most singular fancies, only worthy of a theosoph of the sixteenth century. I will cite but one of them:

"When one sees, in his dreams, either the sun or the moon, or the sky with the pure and serene stars, it is a good sign; it indicates the health of the body. Observation has proved that the firmament responds to the surface of the body; the sun to the muscles, and the moon to the cavities that contain the viscera. When in the dreams, one of these stars appears to be changed or is obscured, or arrested in its course, the seat of the malady is its corresponding part in the body. If there appears any disorder in the sky, occasioned by the air or the clouds, the evil is less than if produced by rain or hail; it indicates a separation of watery humors and phlegm, which are carried to the skin. In this case it is necessary to take exercise by running, being clothed; commencing gently, then quicker, so as to sweat freely. On leaving the gymnasium, long walks should be taken, while fasting. For five days, one-third of the food should be left off to be gradually assumed again. If the above sign was very strong, a vapor-bath should be used, as it is necessary then to deplete the skin, because the disease is in the periphery of the body. Dry food should be used, with bitters, astringents and spices, and such exercise be taken as will produce free perspiration." *

The treatise from which I have drawn these fragments belongs to the historic period that follows this; but I have inserted them in this chapter to complete what I have to say concerning dreams, for I shall have no other occasion to recur to this matter; the great physicians of following ages having occupied themselves with other objects which they judged better calculated to improve the diagnosis of diseases.

## CHAPTER III.

### MEDICAL TEACHING IN THE TEMPLES.

The priests of Esculapius formed, as we have before said, a separate caste, transmitting from one to another their medical knowledge as a family heritage. In the remotest times, no layman, according to the report of Galen, was admitted to participate in the sacred science, but

* "Œuvres Hippocratiques," Gardeil, t. III—Songes, § III.

at a later period, this severe secrecy was relaxed. They consented to reveal their secrets to strangers, provided they would fulfill the tests of initiation. There was, then, according to every probability, some sort of Medical instruction given in each temple. Indeed, history has preserved the memory of three schools that had a great reputation, viz: that of Rhodes, the most ancient of all, which had already ceased to exist, at the time of Hippocrates, and of whose doctrines we have no accounts whatever; that of Cnidus, which was the first to publish a small repertory, with the title of the Cnidian Sentences; finally, that of Cos, the most celebrated of all, and which has given birth to a great number of illustrious physicians, whose writings constitute the most valuable memorials of antique Medicine. Among the means of instruction offered by the priests of Esculapius, there is one that deserves to arrest us for a moment, because it is specially relative to the historic period with which we are now occupied; I mean, the votive tablets which it was customary to faster to the walls and columns of the temples after the example of the Egyptians. These tablets showed, generally, the name of the patient, the kind of disease with which he was attacked, and the manner of his cure.

One of these tablets, found at Rome, on the island in the Tiber, the site of the ancient Esculapian temple, bears the following inscription, in Greek characters:

"Lately a certain Caïus, who was blind, came to consult the oracle. The god required that he approach the sacred altar to perform adorations; at once he passed from the right to the left, and having rested his fingers on the altar, he raised his hands and applied them to his eyes. He recovered his sight immediately, in the presence of the people, who rejoiced to see such marvels accomplished under the reign of our august Antonius."

"Lucius was attacked with a pleurisy, and every one despaired of his life. The god ordered that the ashes of the altar be taken, mingled with wine and applied to his side. He was saved, and gave thanks to god before the people, who congratulated him."

"Julian vomited blood, and appeared lost beyond recovery. The oracle ordered him to take the pine seeds of the altar and eat them for three days, mingled with honey. He did so, and was cured. Having solemnly thanked god, he went away."

"The god gave this direction to a blind soldier named Valerius Aper: Take the blood of a white cock, mingle it with honey, and make a collyrium, which you are to apply to the eyes for three days. The soldier having fulfilled the direction of the oracle, was restored to sight, and returned to make a public thanksgiving to God."

Narratives of this kind, and written in such style, were well calculated to fortify the piety of the faithful; but certainly, they do not serve any great end for the advancement of science. The writers who have boasted of this method of instruction, have not reflected, apparently, upon its glaring defects. Of what advantage, for example, is the record of the third case—"Julian vomited blood, and appeared to be beyond recovery?" What physician would dare rest a prognosis or direct a treatment on so vague an indication? Can we treat indifferently, in the same manner, a stout man, or an infant, or an old man—a plethoric or an anæmic patient—a hemoptysis, or a hematemesis, or a scorbutic hemorrhage of the buccal mucous membrane?*

It requires no reflection to say that a disease cannot be announced by one or two symptoms; but rather it is necessary to recall, 1st, all the anterior circumstances which could have contributed, directly or indirectly, to promote it; 2d, to ascertain the age, sex, temperament, and usual habits of the patient; 3d, finally, to describe with the greatest care the actual general state of the patient, and make every possible effort to know the organ principally affected, as well as the nature of the lesion of which it is suffering.

It is presumable that the Asclepiadæ wrote down in secret the history of each disease, and the means employed to combat it; but we are ignorant through how many degrees science passed before it attained the stage of development exhibited in the Hippocratic works. But we may, at all events, judge from the exquisite taste and precision which characterize some of these books, that they had for a long time been in the habit of closely observing and clearly describing diseases.

## CHAPTER IV.

### THE ORIGIN OF CLASSIFICATIONS IN PATHOLOGY.

When a great number of pathological descriptions, sufficiently detailed, were collected, the embarrassment of such an accumulation began to be realized. Indeed, how could such a mass of material, arranged without any order, be made serviceable? How find in this pell-mell the

* "I have seen a woman attacked with a hemorrhage of this nature who threw off mouthfuls of blood: she had already filled several basins. The liquid was seen running from the surface of all the gums. This fearful affection brought the patient within two fingers' length of the grave, and only yielded, at last, to reiterated cauterization with the nitrate of silver."

record they wished to consult—the tableau which answered best the symptoms of the disease before them? No man's memory was equal to such a task.

In proportion as clinical observations multiplied, it became every day more necessary to arrange them after a method which would impress them upon the memory, and facilitate a recurrence to them when desirable. Such was the origin of the first pathological classification. The idea was suggested, as is seen, by the necessity of relieving the memory and the desire of facilitating researches. We are ignorant of the mode of classification first employed. We only know that, from the beginning of the philosophic period, diseases were arranged by groups, according to the locality affected, descending from the head to the feet. Fevers and other affections that attack the whole economy, or a great number of parts, at the same time, were arranged in separate groups. This disposition, which is met with in the works of Hippocrates, was adopted, with improvements and variations, down to an epoch not far from our own.

The first men who reflected on the phenomena of nature, in endeavoring to solve their causes, principles, and ends, did not imagine anything better to explain the movements of bodies and their continual transformations, than to people the universe with spirits; that is, with invisible and impalpable substances endowed with force, intelligence and will, in different degrees. Each body was supposed to contain at least one of these spirits. This presided over and gave impulsion to all the changes and anatomical phenomena which occurred in the body to which it was attached. Man, whose organization is so complicated and whose functions are so numerous—whose intelligence is carried to the highest abstractions, to the idea of infinity—who is lost in the interpretation of the most simple phenomena, as the movement of the finger or the formation of an atom of matter—whose will controls the surrounding elements, but who cannot prevent a hair turning white—man, I repeat, appeared to the early sages as a multiplied being, a little representation of the universe: consequently, his body was divided into many regions or departments, which were supposed to be governed by spirits of different orders. The system of Pythagoras, which we shall soon describe, offers the first example of this physiological polygarchy: it is the source whence are derived a multitude of ancient and modern theories.

## CHAPTER V.

### THERAPEUTICS.

We have heretofore said that the physicians of primitive times reasoned very little on morbid phenomena, or the effects of remedies; that they contented themselves to observe which were the remedies that would heal certain diseases, and to employ thereafter the same means in like cases.

It appears that during the mystical period no other plan was followed. Hippocrates, Celsus, Galen, and all the historiographers of Medicine, agree in saying that before the introduction of philosophy into this science, i. e., before the age of Pythagoras, there was no other rule than empiricism. But by this, these authors do not allude to rational empiricism, which had its origin much later, in the school at Alexandria: they speak of instinctive or natural empiricism, which we have referred to in the primitive period, and which is still daily followed by persons, strangers to the art, when they obtrude themselves to give counsels to the sick. These persons have constantly in their mouths these words: "I have seen a disease similar to this cured by such a remedy." Their reasoning, however gross it appears to us, is based on an incontestable principle, that may be stated as follows: *Remedies which have cured a disease, must be equally efficacious in curing analogous cases.*

Nothing is clearer, nothing is truer, than this aphorism: it has all the infallibility of a mathematical axiom; and as the medical practice of ancient times rested on this, an author that we have already quoted says with truth: "Medicine for a long time has been in possession of all that is really necessary in regard to principles and method. With these guides, numerous and valuable discoveries have been made during a long course of centuries; and the rest will be discovered, if capable men, instructed in the discoveries of the ancients, shall take these for the point of departure in their researches. But they who reject and disdain the past, and attempt other methods and other ways, pretending to have found something new, will be mistaken and will mislead others."*

Nevertheless, complaints are ceaseless of the uncertainty and instability of medicine. The science is accused of having no stable principles to shelter it from the caprices of fashion and in the changes of

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* Œuvres d'Hippocrate. "Traité de l'Ancienne Médecine," § II. Translation of M. Littré. Paris, 1839.

systems. The masters of the art themselves furnish often the examples for this exaggerated declamation.

Pinel, frightened by the difficulties of medical practice, blames justly the presumption of a writer of the last century,* who promised nothing less than the solution of this general problem—"A disease being given, to find the remedy." But does he not himself fall into a contrary excess, and does he not mistake the true destination of Medicine, when he proposes for the end of his labors nothing but the resolution of the following question: "Determine the true character of a given disease, and its position in the nosological scale."† Does not this take from the medical arch its most essential support, its keystone—therapeutics?

Bichat expresses himself in these terms, on the same subject: "Materia medica, an assemblage of incoherent opinions, is perhaps, of all the physiological sciences, that which most exhibits the contradictions of the human mind. In fact, it is not a science for a methodic spirit; it is a shapeless assemblage of inexact ideas, of observations often puerile, of imaginary remedies strangely conceived and fastidiously arranged. It is said that the practice of Medicine is repulsive. I will go further: no reasonable man can follow it, if he studies its principles as set forth in our materia medicas." ‡

Broussais is not less explicit nor less vehement in his condemnation of the therapeutics of his predecessors. (See, among others, the XV. chapter of l'Examen des Doctrines Médicale, entitled, "De la Certitude en Médecine."

Complaints so unanimous have a cause that it is the duty of the historian to explain. Those who make them are not ignorant, certainly, of the axiom set forth above, and which is in accordance with common sense. Thus it is not, as think the vulgar, the absence of a fundamental principle in practical Medicine which pains them, but rather the difficulties, always great and sometimes insurmountable, that are met with in its application.

To obtain a conception of these difficulties, it will suffice to glance at one of the most simple cases in the practice. Suppose, for example, that a case of palpitation of the heart is to be treated. On this simple announcement a medicaster or an apothecary would not hesitate to prescribe digitalis, or thridace, or some other remedy indicated in the formulary, to combat this symptom.

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* Picairn. † "Nosographie Philos.," introd., page IV.

‡ Bichat, "Anat. Générale." Consid. Générales, § II.

The true physician, one who adds to the lights of science a sense of duty, would not be so prompt: he would, in the first place, know all the associated circumstances; then he would proceed to examine the patient by commencing at the organ where the functional trouble was the most apparent: in short, it would be only after having carefully explored all the viscera and all the functions of the body, that he would feel authorized to prescribe the treatment; for he is aware, that often the mute suffering of an organ distant from the heart may be the cause of the palpitations, so that of ten individuals who complain of palpitation, perhaps in not more than two would the same remedies be applicable. Moreover, all is not finished when a practitioner has properly established his diagnosis. It is yet necessary for him to choose the remedies proper to fulfill the curative indications; that is, he must be well posted in all the internal and external resources of therapeutics. Finally, it is necessary that he secure, on the part of the patient and the attendant, the faithful execution of his directions, and that he carefully observe their effects.

If the enlightened and conscientious practice of Medicine offers so much difficulty in the simpler cases, what must it be when it is necessary to treat complicated and insidious affections, such as constitutional syphilis, or tetters, or scrofula, or leprosy, etc., which, concealed in the economy for months and years, deepening their roots, and changing the fluids, reveal themselves only in an ambiguous manner, after having invaded the entire system, whence it is almost impossible to dislodge them?

But these cases, embarrassing as they are, afford the practitioner, at least, the opportunity of studying and reflecting upon them, aiding himself by the opinions of authors, and trying various means of cure. It is not so, though, when he finds himself in the presence of the plague, the cholera, pernicious fevers, and other epidemics, which fall like a tornado upon the people, carrying off, without distinction, the young, the old, the feeble, and the robust, overturning at once all the functions of the organism, assuming the most varied forms, and striking so rapidly that they allow the physician neither time to collect his thoughts or to make experiments.

Under these calamitous circumstances, he has need, not only of science and discernment, but also of sang-froid, devotion, and courage to contest some victims, at least, with the devastating scourge. And at last, when, notwithstanding so many causes of error, he arrives at the establishment of an efficacious mode of treatment, it often occurs that the constitution of the epidemic is so modified that he is obliged to commence his researches anew.

In other sciences, as physics and chemistry, there is an opportunity of reiterating the same experiment as often as necessary. The agents which concur to produce these, are at our disposal, and we can so isolate them as to obtain only their pure effects, and free from all foreign influences. In practical Medicine it is entirely different; here, nature and accidents, i. e. diseases, furnish us the opportunities of experimenting; but, in the first place, the elements of these experiments are never identical; secondly, much time may elapse before an occasion presents itself for renewing them; and, thirdly, it is impossible to isolate the patients from a multitude of influences that alter the therapeutical results. Hence it follows, that it is impossible rigorously to infer one medical fact from another.

These views show why a long series of observations, collected by a great number of observers, at different epochs and in different climates, are necessary to arrive at the discovery of a curative method—to the acquisition of a therapeutical principle. It is this which has, in all time, discouraged great practitioners, and has driven one of the most illustrious of them to write this sentence, in which he betrays a profound melancholy: "Art is long, life is short, opportunity fleeting, experience deceptive, and judgment difficult. It is necessary, not only that the physician do all he can, but also the patient himself, as well as his attendants and friends, co-operate with him."—Hippoc. App. liv. 1.

Notwithstanding so many obstacles, which have been supposed insurmountable, man has come, by force of research, perseverance, and genius, to find some remedies of marvelous efficacy in certain cases, and to trace some rules which approximate therapeutics to the exact sciences, as we shall hereafter show.

## CHAPTER VI.

### ORIGIN OF SYSTEMS.

We have said that one of the greatest difficulties, perhaps the greatest that is encountered in the use of a fundamental axiom in therapeutics, comes from the impossibility of applying, rigorously, a past fact in treatment to a case in hand; in other words, whatever precision may be obtained in diagnosis, whatever may be the degree of similarity that exists between two pathological states, as there is never identity between them, it follows, that a course of medication which has succeeded perfectly in one case, may, strictly speaking, fail in another.

It is not less evident, that the best means of avoiding, or rather of diminishing this permanent cause of mistakes, consists in perfecting, more and more, the diagnosis of diseases, so as to give it the highest degree of exactness possible. By this means, on the one hand, the confounding of essentially different morbid states will be avoided; and, on the other, the distinction of others but slightly differing in aspect, be established.

The importance of diagnosis once recognized, as it has been by the great physicians of all ages, there is no effort that the mind has not made, no expedients that have not been attempted, in order to give it the highest perfection possible.

The first plan suggested to the minds of observers was, to take account of all the symptoms that presented themselves in the course of the disease, and to record them in regular succession, as they appeared. According to this plan, a great number of nosological tables were formed, so that for any disease, a comparison of the phenomena that appeared was made with the symptomatic tables that had been framed, and from this comparison an appropriate treatment was deduced.

This method, which appears, at first sight, so natural and exact, is, at bottom, extremely defective. In the first place, it has the serious inconvenience of attributing an equal value to all the symptoms, while daily observation proves that notable differences exist. In the second place, a long enumeration of morbid phenomena, recorded one after another, without choice or discernment, is no more a portrait of a disease, than colors, thrown at hazard upon the canvass, that of a person sitting for a likeness; lastly, all classification of diseases becomes impracticable on this plan, for, before attempting a work of this kind, it is necessary to inquire how many analagous symptoms would be required to place two affections in the same class, and assign them a like treatment; it would be absurd to attempt to answer the question.

Thus we see that there is no pathological classification possible, by a simple enumeration of symptoms, yet, nevertheless, without the aid of a classification, the practice of Medicine is a mere groping in the dark, and does not merit the name of Art. Without the advantages of a classification, the physician may justly be likened to a blind person armed with a club, and striking indifferently at the disease or at the patient.

Hippocrates strongly felt the errors of this manner of observing and describing diseases, when he reproached the Asclepiadæ of Cnidus for having adopted this plan, which led them to multiply, innumerably, the division of diseases. "Those who have collected," he says, "the sentences that are termed Cnidian, have well traced the morbid symptoms

as they are exhibited, as well as the manner in which certain affections terminate; but any one may do as much as this, without being a physician, by asking sick persons the symptoms they experience. Much has been neglected in the Cnidian sentences, which it is important for the physician to know, without questioning the patient, and which is essential to the exact appreciation of the disease. Some were not ignorant, however, of the various characters of diseases, and their different forms, but erred whenever they attempted to make a rational classification. Such errors are easily committed, if distinctions are made in diseases from mere shades of difference, and if other names are given to all those which are not exactly identical."*

It is thus well demonstrated that all the symptoms of a pathological state are far from having the same degree of importance. This is almost a trivial statement to make to physicians; only dull dreamers and their stupid adepts, can have classed together a frightful headache and a simple wrinkling of the forehead, an intense gastralgia with an itching of the lobe of the ear. Posterity could not believe that such absurdities were ever perpetrated, if there were not authentic documents to attest it.†

From the moment that the necessity was felt of making a choice among morbid phenomena, they have been divided into durable and transient, essential and accessory, primary and secondary, etc. Then commenced the discussion on the essence of diseases, their causes, signs, march, termination, etc. Thence, in short, sprung Medical Philosophy, and with it, systems of Medicine.

### RESUME OF THE MYSTICAL PERIOD.

During the space of about seven hundred years, which this period embraces, Medicine underwent, in Greece, a first transformation; from having been domestic and popular, it became sacerdotal, and wrapt itself in a mysterious habit. Until that time, the world had princes, captains, shepherds even, acquiring reputation for their skill in the Art: but after the Trojan war, we only hear of consultations given in the name of the divinity, in the temples, or in some celebrated caves, such as those of Trophonius and Charonium. Not but what there were, in those times even, men also, not of the clergy, who assumed to treat diseases, and dispense remedies; but it appears that scientific Medicine, if we may be allowed so to call the limited notions that were

* "Traitè du Régime dans les Maladies Aigués," § 1, II, traduc. de Gardeil.

† Such, and even more silly statements are found in Hahneman's "Matéria Médica."

in their possession, was entirely possessed by the priesthood, and was perpetuated only in their order by an uninterrupted tradition, where it slowly developed itself in the quiet of seclusion.

"The practice of Medicine in the temples of Esculapius," says M. Aug. Gauthier, "may be divided into two epochs. In the first, which extends down to Hippocrates, the Asclepiadæ, though employing, for the most part, superstitious means, have rendered service to science by the taste developed among some of them for observation. It must be agreed, that in those barbarous times, Medicine could make more progress in the hands of a corporation like the Asclepiadæ, than if it had been merely a domestic or popular Art. It is not probable that, at a period so remote, when the arts and sciences were still in their infancy, a man of genius could be suddenly raised up, who would elevate Medicine to the rank of a science. In the second epoch, which extends from Hippocrates to Christianity, Medicine in the temples gradually declined, and was more frequently a gross jugglery."*

The same writer adds, a little further on: "It is difficult to appreciate, to-day, what amount of learning was in the possession of the priests of the temples, and what progress Medicine made in their hands. As there have always been men who have shown a tendency to admire what is ancient, we must not be surprised to find in antiquity, as well as in modern times, writers who have lauded immeasurably the medical knowledge of the Asclepiadæ. On the other hand, there are physicians who deny that they ever possessed any. Thus, M. Malgaigne would consign the Asclepiadæ to that oblivion from which they never ought to have emerged. He censures M. Littré for mentioning them, and proposes to erase their deeds from the history of Medicine and Surgery.† We think it better to avoid extravagance on both sides. It is probable that the reading of the inscriptions in the temples, and the habit of seeing a great number of sick, gave, in the end, a certain amount of medical instruction to the priests."‡

This is, it seems to me, what may be most reasonably said of that part of medical history so profoundly enveloped in obscurity. Where

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* "Recherches Historiques sur l'Exercice de la Médicine dans les Temples," etc., par Auguste Gauthier, 1844, chap, II.

† "Lettres sur l'Histoire de la Chirurgie," inserted in the Gazette des Hôpiteaux, 1842. M. Malgaigne founds his opinion, principally, on the four votive inscriptions heretofore given; but these inscriptions are of the epoch of the Antonins, and can not give us a correct idea of those that were in the temples of the times of the ancient Asclepiadæ, nor especially of the clinical notes made by the priests themselves

‡ A. Gauthier, loc. cit. chap. IV.

there is default of positive documents, free course is unsually given to the imagination, and it is seen that on this point, that of the erudite has not been sterile. But in the midst of diverse opinions, which have been emitted as to the actual knowledge of the Asclepiadæ, some of which I have mentioned, that of M. Gauthier, I repeat, appears to me the most reasonable, the best founded, as well as most universally accredited.

Finally, we touch an epoch in which the Healing Art undergoes a metamorphosis far more interesting for history and for philosophy, and far more advantageous to humanity. Until this time, in fact, the medical edifice had been formed of materials taken at hazard, and gathered, generally, without taste or method; no harmonious thought, or premeditated design, directed the researches of the men who made the first discoveries; but afterward, reason and genius unite to extend and improve what accident and instinct had suggested. The scientific monument of this difficult Art begins to rise, grand and majestic, gradually harmonizing all its parts. We shall no longer follow its progress through ages, by the light of vague conjecture; but, with the help of authentic memorials, and debris more or less well founded. We shall no longer be compelled to divine the intimate thought of the laborers in the different phases of its progress, but we shall read it, stamped in intelligible characters upon the remaining fragments of their labors.

# III. PHILOSOPHIC PERIOD.

COMPRISING THE PERIOD OF TIME BETWEEN THE DISPERSION OF THE PYTHAGORIAN SOCIETIES, IN THE YEAR B. C. 500, AND THE FOUNDATION OF THE ALEXANDRIAN LIBRARY, IN THE YEAR B. C. 320.

## GENERAL CONSIDERATIONS.

Until now, we have groped our way, having to guide us in the obscurity of remote ages only feeble lights, scattered here and there at long intervals. But now we have reached an epoch, where science is striped of its mystic vail, and reveals her secrets in open day. The priests who had so long been in possession of the doctrine of the people, yield now the grasp of the scientific scepter to the philosophers; they retained only the exclusive control of sacred rites, the monopoly of religious ceremonies. Never was a happier revolution accomplished with less effusion of blood; the mind rests with satisfaction on the circumstances which prepared and accompanied it.

It is a fact worthy of remark, and which has not escaped the attention of ancient observers, that the inhabitants of Asia, after having discovered the first elements of the sciences and the arts, and after having carried them to a certain degree of development, paused in the pathway of improvement, or even retrograded; while the inhabitants of Europe, though entering much later into the career of civilization, promptly surpassed their predecessors, and raised themselves to a hight that the former were never able to attain.

Hippocrates signalized this remarkable phenomenon in his treatise on "Airs, Waters, and Places." He sought its cause, and traced it with an admirable sagacity, to the combined influences of climate, manners, and government. A temperature, mild and uniform, which dispenses in man to provide against sudden vicissitudes of the seasons; a soil, unbroken and fertile, from which he obtains, with but little labor, a sufficient alimentation; the use of food almost exclusively vegetable; a despotic government, under which the fortunes and the lives of the people are at the mercy of the caprices of the monarch, where advancement depends on favor rather than on merit; civil and religious

institutions, which parcel off the various classes of society, like flocks, and assign to each individual, from his birth, a rank out of which it is impossible for him to move; all these circumstances appeared to the the philosopher of Cos, eminently calculated to enervate the physical constitution of the people, to blunt their intelligence, and extinguish their moral energy; while the opposite conditions, such as a temperature extremely variable, a broken soil, and a government surrounded by liberal institutions, seemed to him calculated to produce on the body and the mind, effects entirely contrary. In this he explains the cause of the superiority of the nations of Europe over the greater part of those of Asia.

To these considerations, taken outside of the nature of man, the modern physiologists add others, very important, drawn from his original conformation. They teach, from numerous observations, and in particular from the researches in comparative anatomy, that the development of the intellectual faculties is always proportionate to the volume of the cerebral hemispheres, and especially of the anterior lobes. This law, they say, governs not only all the species and varieties of the great family of man, but also the entire animal scale. Now in this anatomical aspect, it appears that the Mongolian race, to which belong the natural inhabitants of Egypt, the East Indies, and China, share much less in these physical advantages than the Caucassian race, from which most of the inhabitants of Europe take their origin. It would follow from this view, that the inferiority of the first, compared with the last, holds to an imperfect innate organic constitution, as much, at least, as to external influences.

However true or false this theory may be, the ancient Greeks found themselves, at the commencement of the period which we named Philosophic, in the most favorable condition, according to the views of Hippocrates, for the development of their physical and moral faculties. They occupied, besides Greece proper, Rhodes, Crete, Sicily, and a multitude of other islands. They possessed an immense extent of coast in Europe, Asia, and Africa. The Hellenic peninsula, which does not equal in extent the half of France, had an exceedingly irregular and broken surface; great extremes of temperature, mountains covered with eternal snow, narrow gorges excavated by torrents, fertile plains, delightful valleys, arid hillsides scorched by the rays of a tropical sun, a sea subject to frequent tempests, a coast full of dangers, and indented with deep gulfs. In short, this nation was endowed, if we judge from their statuary, with the most noble physical forms, calculated to display, according to modern views, beauty, genius, and power.

The political institutions prevalent in most of the Grecian states,

were in harmony with that happy concourse of circumstances to which we have alluded. Nearly everywhere a republican government or a limited monarchy had replaced the absolute power of kings. As the inhabitants were not very numerous in these small states, they could know, watch, and mutually estimate each other, so that public opinion was not much exposed to error. Public honor generally followed merit, and to obtain this it was necessary to show oneself worthy by some important act, by skill in counsel, by extraordinary talents, or by eminent virtue.

The era of brute force, of combat hand to hand with monsters and brigands, had passed away, and the reign of intelligence, of strategy in war and in politics, was conspicuous. The Mythological heroes whose prodigious labors were so much boasted, such as a Hercules, a Perseus, and a Bellerophon, were succeeded by those great men, whose lofty acts have been celebrated in history, such as Leonidas, Miltiades, and Themistocles.

The gymnasiums were no longer, as formerly, places devoted entirely to bodily exercise; they were surrounded by halls and porticos where philosophers, rhetoricians, artists, and physicians, assembled to hold their schools and dispute on questions of art.

The theaters and public amusements, also, realized this social transformation. Strength and address no longer solely excited the admiration of the multitude; a taste had been created, at least in some cities, for the charms of the productions of the mind. We touch that epoc when the spectators of the Olympic games, filled with enthusiam on hearing the reading of the books of Herodotus, gave to each of them the name of one of the nine muses. If Crotona was proud in sending the most vigorous Athletus to those national solemnities which attracted a concourse from all Greece, Athens was not less so of the crowns that were obtained there by her poets, her painters, and her sculptors.

Gradaully science unrobed herself of the grave and mysterious forms with which she had always been clothed in the East, to assume a dress less severe and more transparent, and of the taciturnity that she had had in Egypt, to become more communicative and even somewhat loquacious. The vestiges of this antique Egypto-Indian civilization which had served as a model for that of Greece was insensibly disappearing. Soon the sages of Greece ceased their journeys in search of light in foreign countries, for their own country became in its turn a center of illumination for all nations.

Pythagoras affords us the last celebrated example of distant peregrinations in search of wisdom. He is, also, the last of the sages who have transmitted their doctrines in an unusual language, and who made use

of hieroglyphical writing. As he was desirous to continue in Greece the traditions of the Egyptian school, the history of his life, and of the society that he founded, interests us in a very high degree; for it shows us the contrast and the transition, from an old to a new and more perfect social state.

Born at Samos, one of the most flourishing of the islands of the Ægean sea, Pythagoras was, at first, an Athlete, but having heard one day Pherecydes lecture on the immortality of the soul, he was so charmed, that he renounced every other occupation to devote himself, exclusively, to philosophy. After having followed the course of this eminent master for some time, he felt desirous of knowing, for himself, the customs and manners of other nations. He travelled in Egypt, in Phenicia, and in Chaldea; and it is said, that he pushed his travels as far as India, where he communed with the Brahmins and Magi, and was initiated into the secrets of their worship, laws and doctrines. After a great number of years employed in schooling his mind by the practice of virtue, and enriching it with the most varied knowledge, he returned to his country, and was honorably received by the tyrant Polycrates, who endeavored to efface his usurpation by the mildness of his government, and by the prosperity he brought upon the citizens who had become his subjects. Notwithstanding the efforts of the usurper, the philosopher, not being able to habituate himself to the servitude of his country, left it to seek an asylum in some other land, from which liberty had not been banished. Whilst traversing the Peloponnesus, he assisted at the Olympic games, and being recognized, he was greeted with universal acclamations.

From this place he sailed for the southern part of Italy, or Great Greece. He landed at Crotona, say the biographers, and lodged with Milo, the Athlete, with whom his family was united by the bond of hospitality. It was in this city that he commenced his mission as a reformer. His discourses had such success that in a very little time he drew around him a great number of disciples. He required of them a very severe noviciate, which lasted for five or six years. During the season of trial, they were required to abstain almost entirely from conversation. They ate in common, using a very frugal diet; they assisted the master in his lessons, executed the orders they received without making any observations, and in a word, led a pure, modest, temperate life. Those, only, who persevered, were admitted to a participation in the mysteries of the order.

The veneration of the disciples of Pythagoras, for their master, was so great, that many sold their property and gave the proceeds to him, for the general good.

An end was put to all discussion by the words, "The master has said it." This philosopher joined to an immense knowledge, an easy and attractive elocution. It is said, that he invented the theorem of the square of the hypothenuse; that he was the first to divide the year into 365 days, 6 hours; that he had an idea of our planetary system; that is to say, that he suspected the movement of the other planets around the sun. But the greater part of these assertions have no solid foundation. The sect of which he was the founder, is called the Italian, from the name of the country in which it originated.

Pythagoras did not limit his teachings to the city of Crotona: he visited the principal cities of Great Greece, among others, Heraclea, Tarentum, Metapontum, and established Communities in each of them, subject to the common rules. These institutions exercised, at first, the happiest influence: a sensible reform was developed in the dissolute manners of the inhabitants of those cities. The Pythagorians gained the esteem of the magistrates and the people; they were consulted on all difficult matters, and the superiority of their knowledge, joined to a rare abnegation, drew upon them the public confidence.

It appears that their success rendered them bold. Some of them began to mingle in intrigues and cabals, which was against the formal precept of their master, who often repeated to them, "abstain from party interests, according to the general understanding of that term, and do not frequent public assemblies at periods of elections." The politicians, who felt that their presence was injurious to their projects, accused them of aspiring to domination in public affairs; the priesthood launched their anathemas at them, because they did not share the superstitious prejudices of the multitude. The simplicity of their costume, their symbolical language, their habitual silence, their avoidance of pleasure parties, and every thing, even to the purity of their lives, became a subject of reproach or umbrage. Mobs were excited against them; they were menaced and pursued by the populace in every city, and because they were obliged to seek concealment, in order to save their lives, the greater number expatriated themselves: in this way their society was broken up, even during the life time of its founder, who never again attempted its reconstruction.

Before detailing the results of the dispersion of the Pythagorians, we shall present a sketch of the doctrine of their chief, a doctrine very important in the history of medicine and philosophy; for it is the source of many theories which have exerted a great influence on the march of the human mind; and moreover, it is a key to the pretended occult sciences, the reign of which extended down, even as far as the close of the eighteenth century.

# CHAPTER I.

## DOCTRINE OF PYTHAGORAS.

THERE remains to us of the memorials of antiquity, concerning that doctrine, but a single, very incomplete, and very obscure fragment. It is a collection of sentences, which are attributed to Lysis, a Pythagorian philosopher, and the friend and preceptor of Epaminondas; but it would be impossible for us to avail ourselves of the doctrines of this precious document, without the able commentary of M. Fabre d' Olivet. Thanks to this skillful interpreter, we are able to lift a corner of the veil that covers the famous dogmas of the philosopher of Samos.*

This commentator, in order to give a general idea of the nature of his work, explains himself as follows: "I have followed, in my translation, the Greek text, as it is given at the head of the Commentary of Hierocles, expounded by the son of Casaubon, and interpreted in Latin by Carterius: London edition, 1673. This work, as all those that remain to us of the ancients, has been the subject of a great number of critical and grammatical constructions. The authenticity of the greater part of it seems to be unquestioned, and although there are some variations of opinion, they are of too little importance for me to pause and consider at this time. Nor is it my place to do so; beside, each one must do his own work.

The labor of the grammarians is complete, or must so be regarded; for nothing would ever be finished, if we continually recommence our investigations at the same point, without being willing to rely upon the previous researches of others.

As far as possible, I have extracted literally from the Commentary of d'Olivet all that I give of the system of Pythagoras; nevertheless, for the purpose of abbreviating, I have contented myself sometimes to analyze certain passages, which I have indicated by the suppression of the brackets.

"Pythagoras considered the universe as a unit animated by Divine intelligences, each, according to its perfections, occupying its proper sphere. It was he who designated, first of all, this totality by the Greek word Kosmos, to express the beauty, order, and regularity that therein reign. The Latins translate this word by *mundus*, from which we have derived the French word *monde*. It is from unity, considered as the

* Vers Dorés de Pythagore, explained and translated into French verse, by M. d' Olivet. Paris, 1813.

principle of the world, that we get the word universe, which we apply to it.

"Pythagoras considered unity as the essential principle of all things. He designated God by the figure 1, and matter by 2; so he expressed the universe by 12, because this results from the juxtaposition of the figures 1 and 2." (3e Examen.)

As on the other hand, the number 12 results from the multiplication of 3 by 4, the philosopher conceived the universe composed of three distinct worlds bound closely to each other, each of which was developed in four concentric spheres. The ineffable Being who, placed in the common center of these twelve spheres, filling them all without being comprehended by any of them, was God.

The four spheres from which are formed each one of its three distinct worlds, correspond to four elementary modifications of inert or amorphous matter. These primitive modifications are called fire, air, earth, and water, and are the elements which constitute all material substances.

"The application of the number 12 to express the universe, was not an arbitrary invention of Pythagoras; it was common to the Chaldeans and Egyptians, from whom he had received it, and also to the chief nations of the earth. It was the origin of the institution of the Zodiac, the division of which into twelve constellations has been found to exist everywhere, from time immemorial." (3e Examen.)

"According to this system, absolute unity, or God, was considered the spiritual soul of the universe—the essence of being—the light of lights. Between the Supreme Being and man an incalculable chain of intermediate beings was conceived, whose perfections or attributes decreased in proportion to their separation from the creative principle."* (3e Examen.)

"Pythagoras, in conceiving this spiritual hierarchy as a geometrical progression, regarded the beings which compose it under harmonious relations, and founded, by analogy, the laws of the universe, on those of music. He termed harmony the movement of the celestial spheres, and employed figures to express the faculties, relations, and influences of the different beings." (3e Examen.)

Everything that appeared to have an existence proper, was supposed to proceed from the reunion of three modalities. Thus, the universe, the grand whole or *macrocosm*, included, as we have said, three secondary worlds. Man, the little world, or *microcosm*, was composed, according to Pythagorean views, of a body, soul, and spirit, manifested by three distinct faculties: viz., sensibility, thought, and intelligence. On

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*The author explains in what cases secondary spirits were angels, deities, intelligences, or demons.

the other hand, each ternary, from the one that embraced immensity, to the one that constituted the feeblest individual, being comprised in a perfect whole — a unity, relative or absolute — concurred to form the quaternary or the sacred tetrad. (3e and 12e Examen.)

Consequently, 1 represented the active and hidden principle of all things; 2, its passive principle, or matter; 3, the totality of the faculties; and 4, the plenitude of its essence. The quaternary, was the general type of all living beings, manifesting themselves by facultative modifications. It could thus become the representative sign of any being whatever; but the being to which it was most ordinarily applied, was man. (3e and 12e Examen.)

"The language of numbers, which Pythagoras, after the example of ancient sages, frequently employed, is now lost. The fragments of it which remain, serve rather to prove its existence, than to furnish any light on its elements; for they who wrote these fragments, used a language that they supposed known, in the same manner that our modern savans do, when they employ algebraic characters. It would certainly be ridiculous, before having acquired any notion of these algebraic signs, to attempt to explain a problem written in them; or what would be worse still, to attempt to employ them, without knowing their value, to lay down a proposition. But this is precisely what has been attempted, often, relative to the language of numbers. Some have pretended, not only to explain it, before having learned it, but even to write it — thus rendering themselves contemptible. The learned, finding this language thus travestied, very naturally despised it, and very unreasonably extended their contempt to the ancients who made use of it; acting thus, in this case as in many others: creating, themselves, the alleged stupidity of the antique sciences, and ended by saying, 'antiquity was stupid.'"* (3e Examen.)

The philosopher of Samos admitted two eternal, uncreated essences: namely, spirit and matter; and by the agency of these two principles he explains the various phenomena of sensibility, intelligence, and thought. "Whenever any one has pretended, or shall pretend to found the universe on the existence of one sole nature, material or spiritual, and deduces from the hypothesis, the explanation of all phenomena, he encounters, and always will encounter insurmountable difficulties. It has always been by asking what is the origin of good and evil, that an irresistible overthrow has been given to all systems of this kind, from Moschus,

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* The little sketch that we have given above of the language of numbers, will serve, imperfect as it is, to give an idea of the importance that the ancients attached to ternary and quaternary periods, in the determination of critical days.

Leucippus, and Epicurus, down to Spinosa and Leibnitz: from Parmenides, Zeno of Elea, and Chrysippus, down to Berkley and Kant." (31e Examen.)

"Homogenity in nature was, with the unity of God, one of the greatest secrets of the mysteries. Pythagoras founded this homogenity on the unity of the spirit, with which it is penetrated, and from which all our souls, according to him, took their origin. This dogma, which he had received from the Chaldeans, and the priests of Egypt, was admitted by all the sages of antiquity, as is amply shown at length by Stanley and the judicious Beausobre. Those sages established a harmony in principle, and a perfect analogy between heaven and earth, the intelligible and the sensible, divisible and indivisible substances, in such a manner that what transpires in one of the regions of the universe, or of the modifications of the primordial ternary, was the exact image of what transpired in the other. Beside, I must say, that it is on the homogenity of nature that rest, in principle, all the occult sciences, of which the four principal ones are connected with the human quaternar, beign theurgy, astrology, magic, and chemistry."—(28e Examen.)

"Man, in this system, was considered as holding the middle between intellectual and sensible things, the last of superior and the first of inferior beings, free to move upward or downward, as influenced by the passions that control the power of the will to ascend or descend. Sometimes they bring him into union with immortals, and, by his return to virtue, enable him to recover his proper position; and again, sometimes replunging him into mortal association, and by transgression of the divine laws, cause him to be stripped of his dignity. It is based on this rule, that we find everywhere, though differently explained, the foundation of the dogma of the transmigration of souls. This dogma, explained in the mysteries of antiquity, and received by all the people, has been so disfigured by what the moderns have called metempsychosis, that it would surpass very much the limits of these comments to give it an explanation that could be understood."—(32e Examen.)

"This same philosopher taught that the soul has a body, which is given to it according to its good or bad nature, by the interior labor of its faculties. He calls this body the subtle car of the soul, and says that the mortal body is only a gross envelope."—(37e Examen.)*

The indefinite perfectibility of nature, founded on the homogenity of its essence, is also one of the dogmas of the Pythagorian school, that moderns have appropriated, and which they have fortified by considera-

* We shall show, at proper time and place, the analogy that exists between this doctrine and that of the monads invented by Leibnitz.

tions nearly demonstrative. Among those who have developed it with most success, we cite Leibnitz, Lecat, Ch. Bonnet, Buffon, Linæus, Kant, Schelling, and lastly, the author of the articles, "Nature" and "Animal," of the *Nouveau Dictionaire d'Histoire Naturelle.* The following is his explanation: (35e Examen.)

"All animals and plants are only modifications of an original animal or vegetable. Man is the point of union between divinity and matter, connecting heaven and earth. The light of wisdom and intelligence that beams in his thoughts, is reflected on nature. He is the bond of communication between all beings."[*]

"There may have been a time when the insect, the shell-fish, or the unclean reptile, knew no master in the universe, and found itself at the head of organized beings. Who knows if, in the eternal night of ages, the scepter of the world shall not pass from the hands of man into those of a being more perfect and worthy to bear it. It may be that the race of negroes, now secondary, was once the ruler of the earth, before the white race was created. If nature has successively accorded empire to the species more and more perfect which she has created, why should she stop now? Who shall define the limits of her power? She is ruled by God alone, and it is his might and hand that governs her."[*]

Attracted by the grandeur, beauty, and connection of these ideas, I have given to the extracts of the doctrine of Pythagoras a more considerable extension than I was willing to, but the precious illumination that is found there, on a multitude of things and opinions that are supposed new, have repaid the reader, I hope, and will recompense him more and more hereafter. A system which embraces and unites, by a common bond, God, the universe, time, and eternity; which includes an explanation of all the phenomena of nature, if not true, at least acceptable, at an epoch when nothing could be put in parallel with it, but the gross mythology of pagan priests—such a system, I say, was well calculated to captivate, at once, the imagination and understanding. It is now easy to conceive the admiration and enthusiasm of the adepts, in proportion to their progress in the autopsy of the mysteries, and their submission, respect, and gratitude toward the superior man who initiated them into such lofty conceptions, seems entirely reasonable and natural.

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[*] See the "Nouveau Dict. d'Hist. Nat.," at the word NATURE.

[*] Same work, at the word ANIMAL.

## CHAPTER II.

### PERIODIC PHYSICIANS.

When the storm of persecution had dissolved the Pythagorian societies, the members that composed it were scattered in different parts of Greece. Being no longer held by the bond of the community, many of them revealed in whole or in part the secrets of their doctrine, and to this circumstance we owe the little light that we possess on the subject.

A great number of the disciples of Pythagoras became illustrious in different careers, but we can only speak in this work of those who followed the practice of Medicine. History states that the latter first introduced the custom of visiting their patients in their own houses; that they went from city to city, and from house to house, fulfilling the duty of physicians, as is done at present. On this account they were called periodic, or ambulant physicians, in opposition to the Asclepiadæ, who were consulted by and treated the sick only in the temples. As to the charlatans who retailed drugs in shops, or at market, it appears that they have never had a rank in the medical hierarchy, however numerous they may have been at certain epochs.

Among the Pythagorians who cultivated Medicine, is cited Alcmœon, of Crotona, who is said to have written on anatomy and physics. It is pretended that he was the first to dissect animals; but this is quite doubtful, as Anaxagoras and Democritus were already much earlier occupied than he, in zoology. At any rate, we are not able now to judge either of the reality or merit of his discoveries, as no part of his writings have come down to us.*

Empedocles, of Agrigentum, was more famous than Alcmœon. Many remarkable cures are ascribed to him which attest his sagacity. Among many instances that prove this, we select the following. From time immemorial pestilential fevers ravaged, periodically, his native city. He observed that the appearance of these fevers coincided with the return of a wind named Sirocco, which blows in Sicily, from the east and south. He therefore advised to close by a wall the narrow gorge which gave passage to this wind when it blew on Agrigentum. His counsel was followed, and from that time the pest ceased to make its appearance in the city. Some modern travelers have confirmed this remark; among others, Doctor Brayer has alluded to it, in his excellent

* Lauth, Histoire de l'Anatomie, Strasbourg, 1815, Liv. II.

work, entitled, *Nine Years of Residence in Constantinople.* The inhabitants of Selinus were a prey to an epidemic disease. A stream, by its sluggish course, filled the city with stagnant waters, from which were evaporated, daily, mephitic vapors. Empedocles saw this, and caused two small creeks to be conducted into it. This gave a new impulse to the waters, which ceased to be stagnant and to exhale the noxious effluvia. The scourge disappeared.*

Agrigentum saw flourish, about the same epoch, another physician, named Acron, who was not of the sect of Pythagoras. He rejected in medical practice every species of physiological theory, and insisted upon the value of pure experience only. On this account he is regarded by some as the chief of the empirists. But it is impossible for us to judge of the value of this opinion, because, no fragment of his writings has come down to us. All that can be said, is, that the separation of physicians into several sects, each one having principles, rules, and in some sort distinct symbols, did not take place for two centuries later, until the establishment of the Alexandrian school.

## CHAPTER III.

### THE PRACTICE OF MEDICINE IN THE GYMNASIÆ.

It is an incontestible fact, that Medicine was practiced and taught in the gymnasiæ of Greece, a long time before the Asclepiadæ had divulged the secret of their doctrines.† There were in these establishments three orders of physicians. A director termed the *gymnasiarch,* whose duties consisted in regulating the diet of the Athletæ, and of the young men who frequented these schools; a sub-director, or *gymnast,* who directed the pharmaceutic treatment of the sick; lastly, subalterns, named *jatraliptes,* who put up prescriptions, annointed, frictioned, bled, dressed wounds and ulcers, reduced luxations, fractures, etc.

Marvellous stories are told of the sagacity of the gymnasiarchs, in discerning the slightest variation in the prescribed regimen. They pretended to recognize by certain signs, if any one had been guilty of the

* Diog. Laert. in Empedocl. Des Sciences Occultes, par Eus. Salverte, Paris, 1843, pag. 334.

† See Plato—Laws: Daniel Leclerc, Hist. de la Medicine: C. Sprengel, Hist. de la Medicine: M. Houdart, Etudes Historiques et Critiques sur la Doctrine d'Hippocrate. Paris, 1840, in 8vo.

slightest excess in drinking or eating, if the accustomed promenade had been neglected, or if there had been any indulgence in the pleasures of Venus. Though the author who gives these accounts appears to question their veracity, yet, nevertheless they do prove that the doctors of the gymnasiæ had a high reputation, and possessed a certain degree of skill.*

History has transmitted to us the names of two gymnasiarchs, cotemporaries of Hippocrates, but slightly older than he. The first was Iccos of Tarentum, celebrated for his sobriety and continence; the proverb, "repast of Iccos," was used to signify its frugal character.

The second was Herodicus, or Prodicus, of Selymbria, the same who is named in the passage of Plato that we have heretofore quoted (see page 49.) That philosopher accuses him of being the first who employed gymnastics, in the cure of diseases, and he reprimands him severely on that occasion for having succeeded too well in prolonging the lives of valetudinarians. But the author of the sixth volume of Epidemics reproaches him in an entirely opposite manner; he accuses him of killing his fever patients by excessive fatigue.† It is said that this gymnasiarch obliged his patients to run without stopping, the distance from Athens to Megara, and back again, equal to three hundred and sixty stadia, which are about equal to nine French leagues. These two contradictory reproaches may be easily explained; for such exercise, though useful in some slight chronic disorders, must have been fatal in acute diseases.

## CHAPTER IV.

### SCHOOLS OF THE ASCLEPIADÆ.

We have already said, that nearly everywhere the temples of Esculapius were dispensaries, in which advice was given and remedies administered, and that the young sacerdotal aspirants were there trained in the practice of Medicine. The Asclepiadæ had preserved, until that epoch, the tradition of the Egypto-Indian school, which only allowed them to transmit their doctrines to the members of their caste, and to such strangers as fulfilled satisfactorily the iniatory tests. But when the disciples of Pythagoras had revealed the secret of their mysteries, and the philosophers had dared to teach and discuss publically the

* Œuvres d'Hippocr., 2e livre des Prorrhetiques, at the beginning.

† *Ibid.* livre 6e, section 3e, § 48, edition of M. Littre.

principles of morals, physics, and theology, and when the itinerant physicians, and the professors of the gymnasiæ, had acquired the confidence of the public, the priests of Esculapius could no longer keep silence, under the penalty of seeing the scepter of Medicine, which they had held until then, fall from their hands. They were constrained to bring to the light of discussion the principles and rules of their medical practice. In this way the science, whose aim is the preservation and re-establishment of health, came forth at last from the shadow of the sanctuary, and, vivified by public discussion, made in a short time extraordinary progress.

The priests who served in the temples at Cnidus were the first to follow the impulse of the age. They published the little collection of Cnidian sentences, of which we have already made mention. The Asclepiadæ, of Cos, did not hesitate to follow their example. They published a series of treatises, that were collected at a later period under the title of the Hippocratic Works. This collection, which overshadowed all the medical publications of that period, constitutes one of the most precious monuments of ancient Medicine. But before speaking of the matter which it contains, we shall say a word or two about the personage whose name it bears.

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### ART. I. HIPPOCRATES.

Hippocrates was born in the isle of Cos, of a family in which the practice of Medicine was hereditary. They pretended to trace their ancestry, on the male side, to Esculapius, and on the female side to Hercules. They count as many as seven of its members that had borne the name of Hippocrates; but the most celebrated of all was the second in this range. His birth goes back about as far as the year 460, before Christ. But few particulars are known of his life, and we know not his age at death. Some say he lived to one hundred and ten years; others, to ninety; and others, again, to eighty, only. It is certainly known, that he traveled in Asia Minor, Thrace, Macedonia, Thessaly, and many other countries, because, in various passages of his writings, he names these countries, and the diseases he had occasion to treat in them. From these it is ascertained that he was a cotemporary of Socrates, and slightly younger than he; therefore, he belongs to the famous age of Pericles, when the sciences and arts attained, in Greece, so high a degree of splendor.

The isle of Cos, now Stan-co, situated between Milet and Rhodes, not far from the coast of Ionia, was favored with a delicious climate, and, in former times, was considered, also, as one of the most salubrious

countries; but it has lost its antique reputation since it has been under the dominion of the Turks, for it is now regarded as one of the most unhealthy countries. It possessed then a temple dedicated to Esculapius, and a Medical school, which was the most celebrated of all the Asclepidian schools. Hippocrates was thus placed under very favorable circumstances to receive a most careful and complete Medical education. Nevertheless, he was not satisfied with this domestic instruction. He visited the principal Greek cities of Europe and Asia, communing with philosophers, examining the gymnasiæ, giving attention to all persons who asked his services, collecting, at all points, observations on special diseases, epidemic constitutions, also, on the influence of manners, climate, regimen, etc.

After his return to his native country, being now rich in the materials he had collected, and especially in those that his ancestors had amassed for a considerable length of time, he published those immortal works that astonished the world, and made the physical science of man, one of the most important branches of Natural Philosophy. Already whilst living, he had an unequaled renown in his profession. Plato, his cotemporary, and even Aristotle himself, rest on his authority when referring to the organization of the human body. The habit of calling Medicine the Art of Esculapius, was gradually lost, and learned men more frequently spoke of it as the Science of Hippocrates.

His sons, son-in-law, and grand-children, followed the same career, and added much to his professional labors. But the greater number of them published their writings in his name, either to honor his memory, or to obtain more weight for their opinions and precepts, or to conform to a usage immemorial in clerical families, or, for all these three reasons together: thus, even in a short time after the death of the great Hippocrates, it had already become very difficult to distinguish his own works from those of his disciples. This difficulty continued to increase in proportion as the texts became impaired by the ignorance or inexactness of copyists, and above all by the bad faith of bookmongers. These, according to Galen, had not the least scruple in the world, to write the name of Hippocrates on the medical writings of *unknown or obscure* authors.

By this fraud they augmented, very much, the venal value of the volumes which they had in possession; and on this account, says Galen, they had frequent recourse to it, especially at an epoch when the sovereigns of Egypt and Pontus, rivals in zeal for the increase of the libraries they had founded, purchased in every country all the books that could be procured, and paid for them a price proportional to the reputation of the authors. The savans having charge of the library at Alexandria

very soon discovered the fraud; so from the commencement of that collection, they were careful to place in a separate column, the writings which appeared to them to have really come from the pen of the physician of Cos; and they designated them as volumes of the little tablet, *τα εκ του μικρου πινακιδιου*. This disposition of them in the library, was still seen in the time of Galen.

A great number of commentators have attempted to arrange a catalogue of the legitimate writings of Hippocrates; but, guided by different views, and resting on diverse documents, they have all varied in their enumeration. Galen gives a list of these writings that differs from all preceding ones; and the moderns, in their turn, have each, after his own notion, changed the list of Galen. After the learned researches of Mercuriali, Foes, Grimm, Gruner, Ackermann, Sprengel, and many others, one might suppose the subject exhausted. Nevertheless, at this moment there appears an edition of the works of Hippocrates, in French, in which the author, M. Littré, in a remarkable introduction which occupies nearly the whole of the first volume, passes in review all the questions relative to the authenticity of the Hippocratic books, and throws upon a track, so well beaten, and apparently so sterile, a new light, and perceptions, sometimes profound, sometimes ingenious, which could scarcely have been expected: so true is it of the facts of antiquity, as says the poet,

> "On ne peut dans ce champ tellement moissonner
> Que les derniers venus n'y trouvent à glaner."

But they are not simply gleanings, that the modern translator of Hippocrates has gathered in the field of erudition; it is a beautiful and excellent harvest. After the example of his predecessors, M. Littré examines the catalogue of writings attributed to the father of Greek Medicine, and changes it again.

To guide me in the midst of this labyrinth of divergent opinions, without involving myself in researches, or dissertations, which is foreign to my plan, I have adopted the following rule: I admit, as legitimate, those works only, which the principal critics unanimously recognize as such; and I set aside the others, as doubtful or apocryphal. This rule, it seems to me, is the best to get at the truth as nearly as possible; as the commentators and interpreters have a greater propensity to extend the domain of their favorite author, than to limit it. In accordance with this rule, I now give what appears to me to be an undoubted list of the authentic writings of Hippocrates the Second:

The Prognostic;
Some Aphorisms;
The Epidemics, 1st and 3d books;

On the Regimen in Acute Diseases;
On Airs, Waters, and Places;
On Articulations or Luxations;
On Fractures;
Mochlic, or Treatise on Instruments for Reduction.

This list does not comprise the fourth part of the entire Hippocratic collection; but, thus reduced, the portion ascribed to Hippocrates still suffices, when we consider the era in which they were composed, to justify the enthusiasm of his cotemporaries, and the admiration of posterity.

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## ART. II. THE HIPPOCRATIC COLLECTION.

M. Littré establishes, by convincing proofs, that the collection which we now possess, was not published as a whole until the foundation of the great libraries of Alexandria and Pergamos. Until then, there had been only a few books put in circulation; the major part of these writings had remained in the hands of the successors of Hippocrates, who had only communicated them to their disciples. This collection includes a small number of complete treatises, with a more considerable number of incomplete ones, extracts, fragments, notes, and detached thoughts, the imperfections of which prove, for some of them, at least, that they were not destined to be made public. It is composed of writings of several authors who succeeded each other, from Pythagoras until the death of Aristotle, extending over all the space comprehended by us in the philosophic period.

United to some fragments of Plato and Aristotle, the Hippocratic collection forms the most ancient authentic monument in medical science; it is the first visible link of the chain that binds the doctrines and discoveries of ancient Medicine to the doctrines and discoveries of modern Medicine. Even on this account alone, it merits at once all our attention, by the correctness of the observations, the grandeur of the ideas, and the clear perceptions which adorn several portions of it.

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### § I. Anatomy and Physiology.

Neither Hippocrates nor his descendants ever dissected the human body; the religious respect that was had for the dead in all Greece, prevented it. We, therefore, find in their writings some generalities, merely, on the form, volume, and respective positions of the principal viscera. Osteology, only, is treated there with sufficient exactness, and

this fact is explained by a tradition, which says that the Asclepiadæ, of Cos, kept in their school a human skeleton, for the instruction of their pupils. They had been able moreover to acquire some knowledge on the conformation of the internal parts, in examining the entrails of victims, in the case of the wounded, whose splanchnic cavities were opened, and in dissecting animals. Such are, according to the opinions of nearly all historiographers and critics, the sources whence the members of the Hippocratic family obtained their anatomical knowledge. Nevertheless, I must say, that the author of the History of Anatomy, whom I have already cited, denies that Hippocrates ever dissected animals, or even had in his possession a veritable skeleton. Be this as it may, the following are the books of the collection in which are found the most of the anatomical details: Regions in man; Wounds of the Head; The Mochlic; The Heart; The Glands; The Nature of Bones; A Fragment on the Dissection of the Body.

The prejudice which forbade the touch of the human corpse, did not begin to abate until toward the close of the philosophic period, at which time the family of Hippocrates appears to be extinct, the name of any his decendants no more appearing in the history of Medicine.

Physiology, as we conceive it in our day, that is, that branch of the science of man which is devoted to the description of the functions of each organic apparatus, can not make one step without being guided by the light of anatomy. It is, therefore, not astonishing that we encounter scarcely any traces of it in the Hippocratic writings. We read in them that the glands are spongy viscera, destined to secrete humidity from the surrounding parts, and that the brain, the largest of the glands, attracts the vapors of all the interior of the body. The muscles, which they called flesh, were for the purpose of covering the bones; the nerves, the tendons, the ligaments, the membranes, are all represented as analogous organs, concurring in the same manner to the production of motion. The arteries and veins are generally confounded, or if they are distinguished, it is only on the supposition that the former contained air and the latter blood. Respiration was supposed to moderate the heat of the lungs, and especially of the heart.

But if the physiologists of those times neglected the special study of the organic functions, in lieu of it, they gave themselves up to transcendental speculations on the nature and seat of the principle of life. Some placed the source of life in moisture, others in fire, others in the union of two or four elements, etc. Each one endeavored to sustain his hypothesis by arguments more or less specious, and aspired to the glory of going back to first principles. Intermediate knowledge, or the study of details, was considered as of but little value. Such was the

general direction given to scientific researches by the philosophers. Many books of the collection contain speculations of this kind, as we shall see when we come to expose their theories.

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### § II. Hygiene.

We remarked, in speaking of Medicine among the Hebrews, with what care Moses had regulated everything that concerned health. The Asclepiadæ, who, like him, owed their first scientific instructions to the Egyptian priests, gave special attention, also, to hygiene. Their writings on this branch of the art have in general all the completeness that could be attained from the lights of that era. They are, first, a treatise on Airs, Waters, and Places, a work written with great firmness, and ornamented with all the pomp of style. The author there explains methodically, and on the authority of his experience, the influence of climates, seasons, and various topographical circumstances, on the constitution of man. The work has been reproached for its superficial treatment of the subject; but it must not be forgotten that experimental physics was not yet born, and that without it such a subject could not be treated in a profound manner. We have already spoken of the book at the commencement of our account of the present period, and it may be inferred from what was there said, that no other book of the period contains views of higher philosophic import. I shall add, in support of my assertion, but this single remark: it contains the germ of two modern productions, justly regarded as *chefs-d'œuvre*—the "Spirit of Laws," by Montesquieu, and the "Relation of the Moral and Physical Man," by Cabanis.*

2. A treatise on Regimen, divided into three books; a well-conceived and well-executed composition, notwithstanding some digressions and strange associations that impair the first part. The author considered man as formed of two principles, fire and water, the just balance of which constituted health. The first book is entirely devoted to the development of that theory: in the second he examines the various hygienic modifiers, relative to their faculty for causing dryness or moisture; finally, in the third book he regulates the use which is to be made of these modifiers, as regards the social position and the occupation of persons, the seasons of the year, and especially in regard to the bulk and fullness of the body. Already we see appear the dichotomy, to

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* See his Lettre sur les Causes Premières.

which so many physiologists have since endeavored, under various names, to refer all the modifications of the animal economy.

3. The small treatise on Salubrious Diet, summarily abridged from the preceding work, and free from all physiological dissertation: it is, however, obnoxious to the single reproach of being too succinct. The author mentions in it the custom of certain persons taking one or two vomits a month, as being an ordinary hygienic proceeding of his time. "He who is in the habit of vomiting himself twice a month," he remarks, "will find more advantage in doing so on two successive days than once every two weeks."

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### § III. Pathology and Therapeutics.

We have given a glance of the views which the Asclepiadæ had acquired on the structure and functions of different parts of the human body, as well as of means employed to maintain their integrity of function. We now proceed to say something on the ideas they had touching the disorders of these functions, and the means employed to restore them to their normal state. These last two branches of medicine are designated by the names of Pathology and Therapeutics, each of them to be subdivided in different ways, according to the views of authors and the extent of the knowledge of their age.

One of the most ancient divisions of pathology and therapeutics consisted in dividing diseases and modes of treatment into two classes, one called internal or medical, the other, external or chirurgical. We shall preserve this distribution; not that it is so philosophic, but because the greater part of writers whose labors we must examine have followed it, and because it yet exists in science, notwithstanding its evident defects.

I will make only one prefatory remark, the truth of which will stand out more and more in the course of this history; it is, that a scientific classification is nothing else than an artificial arrangement of the facts and ideas that constitute a science. Now, as new facts and ideas were added each day by the ancients, it follows that the same arrangement would not always be suitable. For example, a pathological classification which may have been satisfactory in the time of Hippocrates, would to-day be very defective. The Nosology of Sauvages, so celebrated in the last century, has already become superannuated. To pretend to trace a systematic and an immovable list which should include all the ideas and discoveries of future generations, would in some sort be like digging a pit, out of which the genius of man could never emerge. Some have attempted this, but no one has ever succeeded. The merit

of a methodic repartition consists, as I think, in embracing as far as possible the totality of the materials of which science is composed at a given period, and presenting them in lucid order, so as to aid the memory and the judgment; but it is plain that such a plan must vary with the different phases of science.

During the philosophic period the animal economy was considered as a whole, nearly indivisible; the morbid phenomena being regarded as the expression of a general derangement of the organism, rather than as the index of the derangement of any part. Consequently, the symptoms, their progress, gravity, and indications, were often studied without regard to any particular species of disease. It was said, for example, "The physician should find his patient lying on the right or left side, having the arms, the neck, and the legs a little flexed, and the entire body moist; for so the greater part of men in good health repose on their beds, and the most favorable position in a patient is that which is assumed in a state of health. To lie on the back, with the arms and legs extended, is less favorable. The tendency to sink in the bed and slide down to the foot is still more unfavorable."*

This study of symptoms, considered in a general and abstract manner was pushed very far in the school of Cos. It gave birth to a branch of Pathology which is termed Semeiotics, which we will now first consider.

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### § IV. Semeiotics.

Semeiotics occupies a very considerable place in the medical works of the Asclepiadæ. Two of the most complete and best achieved treatises of the collection—that on Prognostics, and the second book on Predictions, or Prorrhetics—are devoted to this branch of Pathology. Beside, the first book on Predictions and Coan Prenotions, a species of treatises believed to belong anterior to Hippocrates, as well as the book on Dreams, which is appended to the treatise on Regimen, relate entirely to the same subject. Now, all these portions united, form more than the eighth part of the entire collection, without counting a great number of Semeiotic sentences scattered in other works, and especially among the Aphorisms.

Hippocrates, at the beginning of his work on Prognosis, gives us a very precise idea of the sense that was formerly attached to this word, while, at the same time, he appreciates, in the highest manner, the importance of this branch of Pathology. "The best physician," he

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* Prognostics.

says, "is the one who is able to establish a prognosis; penetrating and exposing first of all, at the bed-side, the present, the past, and the future of his patients, and adding what they omit in their statements; he will gain their confidence; and being convinced of the superiority of his knowledge, they will not hesitate to commit themselves entirely into his hands. He can treat, also, so much better their present condition, in proportion as he shall be able from it to foresee the future. To restore to health all the sick is impossible; and although this would be better than being able to predict the successive progress of symptoms, yet, since men must die, some, succumbing before calling a physician, are carried off by the violence of the disease; others, immediately after having summoned one, surviving only a day or so, expiring before the physician has been able to combat by his art, each of the accidents; nevertheless, it is important to understand the nature of such affections, and how much they exceed the constitutional forces, and, at the same time, discern if there be any thing to divine in the disease; this is the great thing yet to learn." In this way the physician will be justly admired, and will practice his art skillfully; indeed, those who can be cured, he will be much more capable of preserving from peril, in advising them, long before-hand, against certain casualties; and, on the other hand, in foreseeing and pointing out those who must perish, and those who will recover, he will exempt himself from all blame.*

We perceive in this passage, that the word prognostics had a much more extended signification among the ancients, than it has among moderns—that it includes, at the same time, prognosis and diagnosis. The second paragraph of the same book, shows in what way the first Hippocratists established their prognosis, and gives an idea of the extreme difference that exists between the Medicine of their times, and that of ours. "In acute diseases," says the author, "the physician must make the following observations: first, let him examine the countenance of the patient, and see if the physiognomy is similar to that of men in health, but above all, if it is like itself. Such an appearance will be most favorable, but the danger will be greatest in proportion as the expression is unnatural. The features have attained the last degree of alteration, when the nose becomes pointed, the eyes sunken, the temples flattened, the ears cold and contracted, their lobes shrunken; the skin of the forehead dry, tense, and parched; the skin of the entire face of a yellow, dark livid, or leaden hue. If from the beginning of a disease the patient's countenance presents these traits, and if other signs do not furnish sufficient explanation, the patient should be asked if he has lost

* Prognostics, § 1.

much rest, or has a severe diarrhea, or is suffering from hunger. An affirmative response on either of these points, would cause the peril to be regarded as less imminent; such a morbid condition, resulting from any of the causes above mentioned, may be arrested in the course of twenty-four hours; but if the patient does not communicate any of these causes, and if the affliction does not cease in the interval above-mentioned, it may be predicted that death is not far distant."* How much time and observation were necessary to unite thus in a single tableau the evidences of decomposition in the human body at the moment of approaching death; to associate this frightful train of symptoms, sometimes with a slight affection, that may be cured in a day, and again, with a desperate state, whose fatal termination can not be arrested! Remark, that on these occasions the physician forms his judgment, and makes his prognosis, without occupying himself with the interior organs, which require much more sagacity, and would be, however much attention he might give them, a source of frequent error. To-day, a physician, in presence of such an assemblage of symptoms, would seek and find their cause in some visceral lesion; but this was not possible in the age of Hippocrates, and for a long time after him. Deprived of the light of post-mortem examinations, the physician of that time was forced to make his observations on superficial phenomena, and deduce his prognosis and treatment from them.

He who is in the habit of seeing patients, and knows by experience the inconceivable variety, and inconstancy of morbid symptoms, can alone appreciate the time, labor and patience it required to deduce some general propositions from the observation of phenomena; to trace, in a word, those rules of Semeiotics which ancient Medicine has transmitted to us, and some of which still preserve all their original value. If more perfect and more varied means of investigation allow us now to carry our observations still further, we must at least admire the perspicuity of the ancients, who, in many cases, were able to foresee the future events in diseases, with as much certainty as ourselves.

Observe also that the greater part of the rules of Semeiotics are announced in an absolute manner, and in the form of aphorisms, which indicate the way in which they were established. They must have proceeded in nearly the following manner: when the identical or analogous symptoms were presented a certain number of times in the same order, the fact of their habitual succession was established by a general proposition, often without exception, because experience had not yet made these known to them. But afterwards, in proportion as

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* Prognostics. § 2.

such exceptions were observed, they were noted, and new aphorisms drawn from them, which sometimes merely limited the first, or even contradicted them. At length the exceptions to the first observations became so multiplied that those axioms lost much of their value. The authors who adopted at a later period that style of writing, were less affirmative and less absolute in their sentences, and therefore inspired less confidence. This change is already seen to take place between the writings of the treatise on Prognosis and the second book of Predictions. The author of the latter, whoever he was, exhibits less self-confidence, and is less positive than his predecessor. He commences even by cautioning the reader against the marvelousness of certain predictions, and cites for examples those that were attributed to the directors of the gymnasiæ: "As for me," he adds, "I can not divine, but I will describe the symptoms that will enable you to judge which of your patients will recover and which will succumb, and whether they will recover soon, or be long sick." *

It appears from some passages in the same book, and from a fragment on dreams, which is a part of the Hippocratic collection, that it was the custom of physicians of that time, to announce the probable issue of the disease at the first or second visit. This custom still prevails in China. It likewise prevails in Turkey, as is attested by my respectable friend, M. le Doctor Brayer, who relates on this subject a curious anecdote, in which he was in some sort obliged to play the part of a diviner.† Such an usage indicates the infancy of art, and can only exist as the effect of ignorance and superstition. It supposes that a physician is consulted as an oracle — as a man endowed with superhuman science, and not as a simple mortal, who by reason of study and observation has attained the fixed impression in his mind of the natural progress of a given number of diseases, and groups certain characteristics, by means of which he can in some cases announce their probable issue. Hippocrates blames loudly these physicians, who abandoning the route of truth and rectitude, assume the position of thaumaturgs before their patients, constructing their replies in a vague and ambiguous manner, so that they may be adapted to the most diverse developments; in short, the usage of all such artifices as are now employed by sorcerers, card-drawers, and somnambulists, to deceive those men that disease, ignorance, or love of the marvellous renders, and always will render, easy to be imposed upon.

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* Second Book of Predictions, by Gardeil.

† Ibid.

§ V. Internal Nosography;

Nosography is the eye of therapeutics. In proportion as the first is lucid, methodic, and complete, the second is sure and rational. The possession of the most efficacious curative agents is of no avail to us if we can not distinguish the cases in which their use is advantageous, from those in which they would be injurious. In fact the more the means that the therapeutist dispensers have of power and energy, the more they become dangerous in the hands of the ignorant. That which distinguishes the sage and enlightened practitioner from the blind and headlong routinist, is the knowledge of indications. Now this knowledge is only acquired by the comparison of the morbid phenomena that are before him, with those that he has before observed, and with the most faithful nosological descriptions of others.

In many passages of the Hippocratic works, diseases are termed sporadic, epidemic, and endemic, a useful and well founded distinction, of which the practitioner should never lose sight while the same affection changes in gravity and requires different treatment, accordingly as it exists under one or other of the above forms.

The same writers also divide diseases into acute and chronic, but they do not seem to attach a near and precise idea to this separation — they only indicate it, and in their pathological works they mingle indifferently, and confound these two classes of morbid affections; in general they observe no order. In one of them alone they are distinguished from each other by a more methodic arrangement, and that is the work on Affections, a summary abridgment of nosography, the most complete of the collection. In it the diseases are classified according to their localities, beginning at the head and going down to the feet. Thus phrenitis, that was supposed to be a disease of the diaphragm, is described immediately after pneumonia; and what is remarkable, fevers follow phrenitis, because supposed to have their seat in the superior viscera of the abdomen.

The following is the list of the Hippocratic books devoted wholly or in part to internal nosology:

1. The treatise on the Regimen in acute diseases, from the 29th to the 44th paragraph, inclusive.
2. The treatise on the Regions in man, from the 16th paragraph to the end.
3. A small monograph on Epilepsy, which was called the sacred disease.
4. A treatise on Diseases, in four volumes.

5. A treatise on Affections.
6. On Internal Affections.
7. A fragment on Diseases of Girls, relating particularly to histeria.
8. A book on the Nature of Woman.
9. A treatise on Diseases of Women, in two volumes.
10. A monograph on Sterility.

All these books and fragments united, are far from constituting a complete nosography of internal diseases. In the first place the greater part of chronic affections are only designated by their names. Some are not even named, and a very small number are described. The omission of all that class of diseases, so important, is owing to the fact that they were generally regarded as inconveniences which did not merit the attention of physicians. We have already quoted and refuted the opinion of Plato, who blames Herodicus for striving to prolong the existence of valetudinarians by the aid of gymnastics. Here is a passage from another author, cotemporaneous with that philosopher, who agrees very nearly with him: "Leprosy, pruritis, teter, white spots on the skin, baldness, etc, it is said, proceed from the pituite; on this account remedies are employed to evacuate this humor; but they are rather deformities than diseases."

In the second place, though the attention of the Asclepiadæ was principally directed to acute diseases, the descriptions which they have transmitted to us, are, for the most part, so defective, that it would be difficult, if not impossible, to report a single one of them that offers a tableau at all complete or well arranged, of any morbid species whatever.

I conclude from this, that the remains of medical antiquity have now little interest in a didactic point of view; but though they are completely sterile for the student and young practitioner, they will always interest, to the last degree, the erudite man and the philosopher, to whom these delús are one, as stakes that indicate the route followed in antiquity by science, and serving to measure the stages through which she has passed.

On this account, my readers will not be displeased, I presume, to find here two descriptions of diseases, chosen from amongst those which have appeared the best defined in the Hippocratic collection.

### ON PERIPNEUMONIA.*

"Peripneumonia shows itself in the following manner: a great fever is developed; the respiration is hot and frequent; the patient does not

* Traité des Maladies, liv. 3e, § 17, trad. de Gardeil.

know how to contain himself; he is feeble and totters. The pain is felt at the shoulders, above and in front of the chest, as far as the breasts. He grows worse—sometimes delirium supervenes. There is a species of peripneumonia where the pain is only felt when the patient begins to cough. These are more dangerous and longer continued. At first the expectoration is small and frothy; the tongue is yellow, and becomes darker. When it is black from the commencement, the disease is more rapidly developed; it is slower in its progress when the blackening of the tongue comes on later; afterwards it becomes rough and cracks, the finger adhering to it when applied. The changes in the state of the tongue announce those of the disease, the same as in pleurisy. Peripneumonia continues at least fourteen days, or twenty-one at farthest.

"During this time the cough is severe, and the lungs are depleted by the cough. At first, the expectoration is frothy and copious; about the seventh or eighth day, when the fever is in full force, if the peripneumonia is moist, it becomes thicker; unless it shall become on the seventeenth day a green color, it will be slightly sanguinous. From the twelfth to the fourteenth day, it will be abundant, and of a purulent character. Such is the state amongst those who have a humid temperament and constitution, and in whom the disease is severe; but those in whom the temperament and character of the disease are dry, the attack is less dangerous.

"If then, on the fourteenth day, the cough is not accompanied by purulent expectoration, and the lung becomes dry, the patient is cured. In an opposite case, give attention on the eighteenth or twenty-first day, to see if the expectoration is abating; if it is not, ask the patient if it is sweetish. If he says yes, you may know that the lung is suppurating—this condition is determined. It may last a year unless all the pus is cast off in forty days. When the patient shall respond that the expectoration has a very bad taste, his condition is mortal.

"One may thus know what to expect from the first; for when the patient expectorates all the bad pus in twenty-two days, and no new injury is developed, he will recover. In the other case, he will die. The first of these two species of peripneumonia leaves no vestige of itself in the lungs. It is essential to be aware of all the sufferings the patient realizes, and what are the therapeutical resources to combat them. When the symptoms are moderate, success is certain; the peripneumonia is not mortal in its nature, and it will be mild. I will now give the treatment."

PLEURISY.*

When an individual is attacked with pleurisy, the following are the symptoms: pain in the side, with fever, shiverings and frequent respiration; there is cough, and difficulty in breathing while lying down. The expectoration is bilious, and of the color of the bark of the pomegranate when there is no lesion in the lungs; if such exists, it will be sanguineous; when it is bilious and there is no lesion, the attack is milder. In an opposite case, it is graver, and even mortal if hiccup supervenes; the cough brings up saliva and clots of black blood; the patient dies on the seventh day. When he survives to the tenth day, the pleurisy is healed; but if it goes on to the twentieth, suppuration is established, and pus is expectorated, which is finally vomited, and the cure is rendered difficult.

"There are dry pleurisies without expectoration, which are very grave. The crises occur as in humid pleurisies, but there is more need of drinks. The bilious and sanguineous crises take place at the ninth and eleventh days. It is cured more easily when from the commencement the pain is moderate, and becomes acute about the fifth or sixth day; the disease continues then until the twelfth; if the patient pass that he will get well. When the suffering has been moderate from the beginning, but violent from the seventh to the eighth day, the crisis is not determined until the fourteenth, after which the danger is passed.

"Pleurisy of the back differs from the preceding, in its pain seeming to be more like that of a wound. The patient groans, and the respiration is frequent. Very soon expectoration occurs in small quantities; general prostration follows. On the third or fourth day a bloody urine is voided. Death occurs commonly about the fifth or seventh day. Those who pass these days may recover. The disease after this, becomes more tractable. It is necessary, however, to be watchful till the fourteenth day; beyond that, the patient is safe.

"Some pleuretics expectorate pure phlegm only, whilst their urine is sanguineous, resembling the fluids of roast meats: they feel very acute pains in the front of the chest and groins. If, however, they pass the seventh day, they will get well.

"When in pleurisy there supervenes redness on the back, with heat at the shoulders, a feeling of weight and uneasiness in the abdomen, with green and fetid discharges, the patients will die on the twentieth day in consequence of this evacuation, but if they live beyond the twentieth, they will get well."

* Traité des Maladies, Vol. III, § 18, 19, 20, trad. de Gardeil

Such descriptions, as already remarked at the commencement of this chapter, have no utility for a reader unacquainted with medical studies, or for a beginner; but they are valuable as historic record, to establish the state of the Science at a very remote epoch, of which we have but few remains. The experienced practitioner will discover in them many interesting features of the diseases which he has himself observed, and which prove to a certain point, the exactness of the tableaux.

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### § VI. Therapeutics.

The physicians of the two preceding periods have not emitted any general law in Therapeutics; they regulated their practice instinctively upon the following plan: when a remedy has cured any disease, it should cure all other identical diseases. This axiom, incontestably true in itself, is but a fragment of one much more general, which embraces the whole philosophy of causes, and may be expressed thus: the same agents, placed in the same identical circumstances, will always produce the same effects. But a proposition so universal, which appertains to medicine no more than to the other sciences, and which takes no account of the internal action of medicines, appeared too superficial to philosophical physicians, and too vague to practitioners who desired a rule less common; in short, one more directly related to the healing art. Consequently, both parties sought another fundamental principle, and the following is the result of their speculations on this subject: it was held that there always exists a species of antagonism between the cause of the morbid phenomena and the active properties of the remedies that cured them; or rather, between the pathological modification of the organism and the curative impulse given to the economy by the treatment. This law was expressed by the following aphorism: *contraria contrariis curantur.*

The greater number of medical writers adopted this principle, and endeavored to establish the practice of medicine upon it. Now, two things were necessary for that: first, to discover the essential cause of each disease, or the primitive lesion that constitutes each morbid species; secondly, to determine the mode of action and the degree of energy of therapeutic agents, so that the practitioner may choose from among them, those which were more directly contrary to the affection he is called upon to combat. The course of this history will show us the results of the efforts made at different epochs to attain this double end, and we shall have occasion more than once to discuss the validity of *hypœnantiosis*, or the doctrine of contraries.

At present it will suffice to say, that from its commencement this principle has not been universally adopted. Thus, the author of the book entitled "*Ancient Medicine,*" one of the most philosophic of the collection, devotes several paragraphs to the refutation of this axiom. And we read in the treatise on the Regions of Man, that diseases are sometimes cured by contraries, sometimes by similars, and, finally, sometimes by remedies which have neither similitude nor opposition.*

We shall conclude this chapter by giving examples of the manner in which the practitioners of those times applied the general principles of Therapeutics to the treatment of particular diseases. The following cases appear to me to be the best arranged and most complete of any of those recorded in the collection:

TREATMENT OF PLEURISY AND PERIPNEUMONIA.

"It is necessary to examine in the following manner the peripneumonic and pleuritic affections: if the fever is acute; if there is pain in one or both sides of the chest; if the patient suffers during expiration; if he coughs, and the expectoration is rusty or livid, or thin and frothy, or of a blood-red—if, in fine, it differed at all from that which is natural, the following course must be pursued: the pain extending above and towards the clavicle, or towards the vein and the arm, the internal vein of the arm on that side should be opened. The quantity of blood drawn should be proportional to the constitution of the body, the season of the year, the age and color of the patient; and if the pain is acute, the bleeding should be boldly pushed to syncope; afterward an injection is to be administered.

"If the pain occupies the inferior region of the chest, and if the tension is great, you should prescribe for pleuritics a mild purgation; but they must taste nothing else while the medicine is operating. After the purgation they should have an oxymel. The purgation should not be administered till the fourth day: during the first three days injections should be employed; but if they are not sufficient, the purge should be given, as above said. He must be watched until the fever ceases and the seventh day is attained; after that, if he appears out of danger, he may take a little barley-water, weak at first, and sweetened with honey. If the convalescence progresses and the respiration is good, the tisane may be given twice a day, and be gradually increased in quantity and strength; but if the convalescence is slow, the drink must be lessened, and for nourishment a small quantity of a weak tisane once a day. It

* See § 67, 68, 69, 70, Gardeil.

should be given when the patient is in the best condition, which may be known by the appearance of the urine.

"To those who approach the close of the disease, it is not necessary to give the tisane, before you see the coction manifested in the urine or expectoration; nevertheless, if, when purged, the patient has abundant evacuations, it is necessary to give the tisane, but in less quantity and weaker, otherwise the emptiness of the vessels would allow him neither to sleep, nor to digest or await the crisis. With this exception, the crude humors should be liquefied, and whatever has been the obstacle, be ejected: then nothing prevents alimentation. The expectoration is perfectly concocted when it appears like pus: the urine, also, when it has a red sediment, like brickdust.

"As to the pains in the side, nothing contra-indicates the use of fomentations and wax plasters. The legs and loins should be rubbed with warm oil and then anointed with fat. The hypochondria should be covered as high as the breasts with a flaxseed poultice. When the peripneumonia has reached its height, nothing can be accomplished without purgation: it is bad if the patient has dyspnea, or the urine be thin and acrid, or there be sweats around the neck and head. These sweats indicate danger in proportion to the violence of the disease, which is known by the suffocation and rattling, which increases and produces death, unless there supervene an abundant flow of viscid urine or of concocted sputa. Whichever of these two phenomena supervenes, it indicates resolution."

An eclegma is prescribed for peripneumonia, with galbanum and grains of pine-seed, in Attic honey. Other expectorants are employed, such as worm-wood (*Artemisia abrotanum*, Lin.), and pepper in oxymel; purgatives: boil black hellebore (*Helleborus orientalis*, Lin.), and give it as a drink to pleuritics, at the commencement, and while the pain is felt. A useful remedy in affections of the liver, and in pains proceeding from the diaphragm, is a drink of opoponax (*Pastinacæ opoponax*, Lin.), boiled in oxymel and strained. In general, a remedy, which is to act on the stools or urine, should be given in wine, and in honey; if to act on the stools alone, it should be given in a much larger quantity of diluted oxymel.

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### § VII. External Nosography and Therapeutics, or Surgery.

The following is a list of the books of the Hippocratic collection, that treat of external nosography and therapeutics, according to the translation of Gardeil:

1. *The Laboratory of the Surgeon*, in which dressings, bandaging, and the use of apparatus is taught.
2. *On Fractures*, a treatise which appears above the anatomical knowledge of the times.
3. *On Articulations* or *Luxations*, which seems to be a continuation of the preceding work.
4. *The Mochlic*, an extract, or small abridgement of the book on fractures, and the one on luxations.
5. *Wounds of the Head*, a monograph, extremely remarkable for the perfection with which the subject is treated.
6. *On Sight, and Diseases of the Eye*, } mere fragments, not of much
7. *On Wounds*, } value.
8. *On Fistula*, }
9. *Hemorrhoids*, } monographs, passably good.

A glance of the eye is sufficient to show that a great amount of matter that belongs to Surgery, is not mentioned—such as penetrating wounds of the chest and abdomen, hernia, and vesicular calculi. The Hippocratic works describe only a very small number of surgical operations, and with the exception of the treatises on fractures, luxations, and the monograph on wounds of the head, it may be said of all the other books mentioned above, that they only glance at the subject whose title they bear. In fine, all the fragments, re-united, are very far from composing a complete treatise on surgery, or a treatise that may be compared with those that belong to the next historical epoch; but it is probable, and even certain that we do not possess all the surgical works of the Hippocratic authors; what we have, though, prove that the Asclepiadæ carried this branch of the healing art to a degree of perfection no less remarkable than that of internal Medicine.

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### § VIII. Obstetrics.

If there are occasions, when the aid of medical knowledge is palpably necessary and efficacious, they present themselves especially in the practice of obstetrics. There, often, the life of one or two individuals, in perfect health, depends on a manoeuver, more or less skillful, or an indication, more or less well fulfilled. Beside, the duty of the accoucheur, or sage-femme, is not limited to watching and giving assistance in the act of parturition: their care often extends throughout the entire period of gestation and lactation. It is not, then, astonishing, that physicians were occupied, in the earliest times, with this branch of the art, and

that legislators have subjected it to special regulations. It may be inferred, that the Asclepiadæ did not neglect it, from the simple enumeration of the writings that they have left on the subject.

T. II, OF GARDEIL.

1. A monograph on Generation.
2. Do. on the Nature of the Infant.
3. Do. on Pregnancy, in the seventh month.
4. Do. on Pregnancy, in the eighth month.
5. A small treatise on Accouchement, entitled, *On Superfetation;* an excellent abridgement of Obstetrics, for the epoch.
6. A small fragment, on Dentition.

T. IV.

7. The first book of the treatise on Diseases of Women.
8. A fragment, on the Extraction of a Dead Fetus.

The treatise on superfetation does not, in fact, include but a single paragraph that responds to its title; all the rest is relative to accouchements. We there find a succinct and methodic resumé of the knowledge of the Asclepiadæ on this subject, and I can not do better than refer to it the reader, who is desirous to inform himself on the state of the art, in the age of Hippocrates. This abridgement is distinguished for its interesting observations, and by the absence of certain barbarous and gross practices, that impair other writings of the same collections.

The practice of sacades, for example, is not mentioned there, which proves that the author did not approve of it; for he could not have been ignorant of this odd proceeding, which is mentioned in several of the Hippocratic works; notably in the first book of the treatise on the diseases of women, where it is minutely described.*

Apropos to this last treatise, I will observe, that its author, whenever he speaks of matters relating to accouchements, addresses himself to midwives, which makes it probable that the ordinary practice of obstetrics was committed to them, and physicians were only called, in grave or extraordinary cases.

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## § IX. Clinics.

The clinic does not form a particular branch of medical science; it embraces all, and makes the application of them at the bedside—it

* Œuvres d' Hippocrate, § 81 de Gardeil.

constitutes the highest degree of medical teaching. There, the master unites, constantly, example to precept—practice to theory. Nothing is better calculated to mature the experience of young men, than those lessons which are given at the bedside of the sick, when he who has charge of the patients, unites profound instruction with great probity; and by this last term we comprehend, with a modern professor, candor, frankness, justice, humanity, and disinterestedness. M. Bouillaud insists, justly, on the necessity of joining moral qualities to knowledge in the practice and teaching of Medicine. He clearly demonstrates, that in default of morality, the most beneficent act is only an instrument of deception, and a dangerous weapon, in unsafe hands. He defines the true physician to be an honest man, instructed in the art of healing. *Vir probus medendi peritus;* a definition which cannot be too much popularized, for it shows to the public what are the qualities they must seek in a man to whom they confide their health.*

It was as much by his virtues as by his genius, that Hippocrates gained universal approbation. These virtues shine with great eclat in the clinical observations which he has transmitted to us. He never appears there as laboring for a reputation; the sole desire that animates him is, to be useful to his fellows, in enlightening them on the means of preserving health, or in curing diseases. He avows, with an ingenuousness that finds few imitators, his reverses and faults, convinced, doubtless, that instruction is as much given in pointing out an error, as in showing the truth.

The most ancient collection of clinics bears the title of Epidemics. These sort of afflictions leave in the minds of the people such impressions of astonishment and terror, that other than medical writers have not disdained to trace their history, as extraordinary events of interest to posterity. It was then entirely natural that physicians should relate detailed accounts of them; not for the simple purpose of interesting or gratifying the curiosity of the reader, but in the hope of finding some means to prevent the return of similar pests, or of moderating their effects.

To attain this end, physicians proposed, in the first place, to ascertain the cause of epidemics. The following is their reasoning, to prove that it is always in the atmosphere: "Some diseases," say they, "come from the regimen, others from the air which we breath to maintain life. Where several persons are attacked at the same time and place by the same disease, we must seek the cause in that which is most common to all, and this is the atmosphere. It is manifest, then, that these affec-

* Essai de Philos. Médicale. Paris, 1837, p. 239.

tions do not proceed from the regimen, because they attack every one indifferently; men as well as women; hard drinkers as well as those who drink only water; the industrious as well as the idle; those who live luxuriously as well as those who have only bread for food. So then, when an epidemic prevails, the cause certainly does not exist in our regimen, but in the air we inspire, receiving from it some deleterious element.*

This reasoning cannot be objected to unless it be thought too absolute, for epidemic affections may be developed under the influence of a bad alimentation, in countries where famine prevails, in besieged cities, in ships, etc.; others spring from moral causes, such as the discouragement which follows a retreat, religious exaltation produced by fanatical preaching, or from persecutions.†

Nevertheless, it cannot be denied that the air is the most active medium—the most powerful vehicle of epidemics, especially of those that ravage large districts, and for a considerable length of time.

Another very important observation, which did not escape the Asclepiadæ, is that during the reign of epidemics, the most varied intercurrent affections have a particular physiognomy which is common to all, and which gives them a familiar likeness.

Resting upon this double basis, the Hippocratic writers believe it important to note with care, the state of the atmosphere before and during the epidemics, and they have described with not less exactness, the general character of intercurrent diseases. In this way, connecting the meteorological phenomena with the morbid ones observed during a season or a year, they describe what has been named the epidemic constitution of that season or year. They hoped, that after having thus described a great number of medical constitutions, they would be able to ascertain what atmospheric conditions habitually preceded and accompanied different epidemics, so that it would be possible, in certain cases, to foresee the advent of the scourge, and prepare for it.

Such was the hope also of Sydenham and Stohl, worthy emulators of Hippocrates, when they, with admirable patience, prepared their tables of medical constitutions. Too few physicians have had the courage to follow in their footsteps. The happy mortal to whom is reserved the honor of determining the relation or law that connects epidemics with certain states of the atmosphere, has not yet appeared.

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* Hippocratic Works. Treatise on the Nature of Man, Vol. 1, sec. 10 and 11. Gardeil.

† Raphania, or the disease of fanatics, scurvy, and convulsions of St. Medard, etc.

Seven books of the Hippocratic collection bear the title of Epidemics. Nevertheless, the first and the third alone are devoted, effectively, to the description of epidemic constitutions, and appear to follow each other. On this account, they are considered as being connected, and are separated from the others, which are not supposed to belong to Hippocrates. He describes in the first place, the most remarkable atmospheric conditions; afterwards, the general character exhibited by intercurrent diseases by the constitution; finally, he traces the particular history of some diseases. The following extract will enable the reader to judge of the method and talent for observation displayed by the author.

FIRST CONSTITUTION.*

"In the island of Thasos, during autumn, towards the equinox, and whilst the Pleiades were at the horizon, (that is, for those fifty days after the autumnal equinox), there were gentle, continuous and abundant showers, southerly winds, and open winter, with slight breezes from the north, and dryness; in sum the whole winter seemed like spring. The spring season, in its turn, was marked by south winds, coolness and slight showers. The summer was in general, cloudy without rain; the monsoon seldom blew, and with but little force or regularity.

"All the atmospheric conditions having been southern and dry, an interval in this constitution, opposite and northern, occurring in the beginning of spring, developed some cases of remitting fever; but they were generally moderate. There were but few attended with nasal hemorrhage, and no one died. Tumors were developed in several persons—on one side only in the greater number; but no one had so much fever as to be obliged to keep his bed; though some had a little heat of skin. These tumors disappeared in all cases without any difficulty; there was no suppuration, which so often happens with tumors arising from other causes. They were large, soft, diffused, without inflamation or pain, and disappeared without any critical sign. They were manifested in youths, in men in the flower of their age, and especially in those who took gymnastic exercises; few women were attacked. The greater number of the afflicted had dry coughs, with hoarseness, but no expectoration."

Very soon, in some, but later in others, there was developed a painful inflamation of the testicle, some times on one side, then on both. Fever was not always present, but there was much suffering. It is to be added, that the Thasians did not seek medical "advice."

The above is an account of the Medical Constitution for the end of

* Works of Hippocrates, by Littré, Vol. 2, p. 599. Epidemics, Book 1, sec. 1.

winter and the spring. The author describes consecutively, that of the summer and autumn, after which he reports some historical particulars.

"First patient—Philiscus—lived near the wall. He took to bed. First day: acute fever, sweat; a bad night. Second day: general exacerbation; in the evening, a small injection procured favorable evacuation; a tranquil night. Third day: in the morning, and until mid-day, the fever appeared to have ceased, but towards evening, acute fever, with sweat; tongue begins to be dry; urine dark; he passed a painful night, without sleep, and had hallucinations on all subjects. Fourth day: general aggravation; dark urine; the night was passed better, and the urine better colored. Fifth day; towards the middle of the day, he had a slight epistaxis of very dark blood; urine varied, a cloudy substance similar to sperm, floating in it, but without precipitating; after a suppository, he passed a little feces, with wind. The night was uncomfortable; short naps; he talked much in a rambling way; all the extremities were cold, and could not be warmed; he passed dark urine; slept a little towards day; became speechless; cold sweat and livid extremities. He died about the middle of the sixth day.

"In this patient the respiration was, to the end, full and slow, as if he had to remember to breathe. The spleen was swelled and formed a round tumor: the cold sweat continued till the last: the access was every other day."

The above tableau gives an idea of the whole of the morbid phenomena, though it leaves something to desire, as we shall show presently. There is no comparison possible between a narration thus made and the miserable votive tablets suspended on the columns of the temples. The first and third books on Epidemics include together forty-two particular histories, similar to that given above. Twenty-five of these terminated fatally, and seventeen, only, favorably.

Certain critics have taken occasion, from this frightful mortality, to blame the curative method of Hippocrates; but they show that they are superficial observers, or they would have seen that Hippocrates only gives the detailed history of the gravest and most remarkable cases. The proportion of fatal cases would have been much less, if he had included all his cases. This conclusion is not a conjecture—it is proven from many passages of our author; among others, in a remark cited above, in the description of the first medical constitution: "All the atmospheric conditions having been southern and dry, an interval in which the constitution was opposite and boreal, at the beginning of spring, originated some fevers. These fevers were generally moderate; a few had nasal hemorrhages, but none died."

A reproach much better founded might be made to the clinical rela-

tions of the old man of Cos, viz: for having said nothing, or next to nothing, of the regimen and treatment to which he submitted the sick. This omission is keenly felt, rendering it impossible for the reader to appreciate the curative method of the physician. It forms an important vacuum in the history of the disease; for it is evident that the therapeutic or hygienic means employed during the course of a disease affect the progress and duration of it, however simple they may have been. It is not a matter of indifference, for example, whether a sick person be placed in a convenient chamber, warmed and ventilated, or in a small, obscure, cold, and infected apartment; or whether he is permitted to drink wine without discretion, or only to have pure water.

The five other books on Epidemics contain clinical observations, collected without order, and relating to all sorts of diseases. A great number of these histories are only simple notes or detached reflections; some, however, are edited with taste and completeness. The mention made in these, of the treatment, shows a progress, compared with the preceding ones. Here is one of the best, I think, though not one of the longest.

Edematous swelling during pregnancy; great dyspnea; expectoration of a large amount of pituitous matter; improvement.

"The sister of Harpalides, being in the fourth or fifth month of pregnancy, an aqueous swelling commenced at the feet and around the eyes; the skin became swelled up, as in phlegmatic persons; dry cough; sometimes orthopnea; the dyspnea and suffocation were such that the patient sat up in her bed, being unable to lie down; and if she felt sleepy, it was when sitting up. Beyond this there was little fever: the fetus was for a long time still, as if it were dead, and it fell about, following the position of the woman. The dyspnea persisted for two months; but the patient making use of Egyptian beans, (*nymphæa nelumbo*, Lin.), prepared with honey and with a honeyed eclegma, and drinking the cumin of Ethiopia, in wine, her condition improved; her expectoration became abundant, looked mucoid and white; the dyspnea ceased. She brought forth a female child."[*]

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### § X. Aphorisms.

I will terminate this succinct review of the Hippocratic collection, by the examination of a work which was intended as a recapitulation of all that is set forth in the others. I mean the collection of Aphorisms, in seven of his books. No medical work of antiquity has had a more colossal

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[*] Works of Hippocrates,—Epidemics, book VII.

reputation than this; physicians and philosophers have professed for it the same veneration as the Pythagorians manifested for their golden verses. The aphorisms of Hippocrates were long regarded as the crowning glory of the medical scientific edifice—as the most sublime effort of medical genius. Only a few years past, the faculty of Paris required of the aspirants to the doctorate to insert a certain number of them in their theses; and perhaps nothing less than the political revolution in France was sufficient to overthrow this old relic of a superannuated adoration.

For some propositions that express general truths of recognized utility, and some clear and profound observations, how many are there that contain exceptional truths, vulgar reflections, and even errors and contradictions. In a practical point of view, the Aphorisms appear to me to be nearly an absolute nullity; because, having no union with each other, they make only a superficial impression on the mind of the reader, and are easily effaced from his memory. Besides, in admitting even that a practitioner might have them all at his fingers' ends, they would not render him much more skillful in treating diseases. Such reading, then, can offer no solid instruction to the student, nor is it valuable to any but a practitioner whose judgment is ripened by experience, for he alone is capable of discerning what is true and what is false, or the good and the bad in these general maxims: to him they are merely a recapitulation of scattered notions and observations.

This was my judgment of them long before M. Littré had published his translation of this Hippocratic treatise. Since I have read the learned explanations of this commentator I have not changed my mind, for it seems to me that both of us consider these famous sentences from different points of view—he as an erudite and a philosopher, and I as a simple practitioner. "The Aphorisms form," says M. Littré, "a succession of propositions in juxtaposition, but not united. It is, and always will be, disadvantageous, for a work to be written in that style, and this disadvantage is increased if the Aphorisms are considered with modern ideas, and with the notions we now have of physiology and pathology: they thus lose all their general signification, and the aphorism, already so isolated in itself, becomes more so when introduced into modern science, with which it has but little practical relationship. But it is not so when the mind conceives of the ideas which prevailed when the Aphorisms were written: then, in those parts where they seem most disjointed, we see that they are related to a common doctrine, which unites them together; and in this view, they no longer appear as detached sentences.*

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*Aphorismes, Argument, § 11, Tome IV., page 405, des Œuvres d'Hippocrate.

### ART. III. THEORIES AND SYSTEMS.

Now, after having considered the state of Medicine under the Asclepiadæ, in the isle of Cos, in an exclusively practical manner, and, in some sort, material also, it remains for us to examine it in a theoretical point of view — to seek the invisible bond that unites all parts of their doctrines, and connects them to a common principle, as the branches of the same tree.

In all times, and perhaps in ours more than any other, systems have been decried. They have been and are still accused of being only a tissue of errors and a source of eternal discussion. The epithet systematic, (theoretic — with us. *Tr.*) applied to an author or a book, has become an expression of disdain. Many would banish from Medicine all theory, all system, and preserve only the facts and results of experience. Their plan appears very commodious and sure, at first sight, but when more closely examined, it is impracticable. Those who have recommended it the most, have not been able to avoid violating the plan, in their writings as well as in their practice. M. Bouillaud* demonstrates this in a positive manner; and M. Monfalcon, but little favorable to systematic writers, is also forced to say: "Much has been said against systems and certainly with truth. We condemn them and still we are not able to do without them. Every instructed physician has a way of explaining to himself life and diseases; he wishes to form an opinion of what he sees as well as of what he does. If the received doctrines do not satisfy him, he modifies them, in a way most satisfactory to himself." †

I will add, that learned physicians are not the only ones that essay to interpret the phenomena of life; for in this respect the most ignorant are no less prodigal in explanations, nor less prepossessed in their manner of regarding them; so natural and irresistible is the impulse to try to explain the phenomena that strike our senses.

In fact I may say, without a theory, without some systematic arrangement of partial opinions that tend toward a common end, there exists no science. Clinical observations, collected with care, but arranged without art and method, in a word, without system, constitute no more a scientific edifice, than a confused pile of materials constitutes a monument of architecture.

Theories and systems concur to the advancement of the sciences by uniting by an artificial bond the diverse notions of which they are com-

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* Essai de Philos. Médicale. Paris, 1837, deuxième partie, chap. III, art. 1, § 1.

† Diction. des Sciences Médicales, the words System and Théorie.

posed, in a way to assist the memory, and enlighten the judgment. It is true that scientific systems sometimes propagate illusions and ridiculous prejudices, but the illusions and prejudices that spring from ignorance and barbarism, that is to say, from the absence of all reasonable system, are no less numerous, ridiculous, and absurd.

A system is true, when it is founded on real analogies; it is false, when it rests on imaginary analogies. A system may be true in certain parts, and false in others; but there are few systems that are entirely erroneous. This is also the opinion of the writer that I have just cited. "If systems," says M. Monfalcon, "were composed only of errors, of conjectural opinions, they would make but few partisans; but there is not one that does not repose on some important fact or some well recognized physiological law. Those who propose them do no other wrong than exagerate these laws and make the whole of Medicine subordinate to them: those who adopt them see only one side of the subject, and submit too blindly to the reason of one single man.*

Thus then the most common defect of medical systems is not a lack of foundation, nor the want of a support derived from correct observation, but it is rather the exageration of certain truths, to the neglect of others not less important — the consideration of objects too exclusively under one aspect. "The fault," says Bichat, "with those who have a general idea on Medicine, is to bend all the phenomena to this idea. The defect of generalizing too much has perhaps been more injurious to science, than that of seeing each phenomenon in an isolated manner.†

Being convinced of the necessity of theories to harmonize the various ramifications of science, persuaded that without their aid the human understanding could not grasp a great extent of knowledge, nor elevate itself to the highest considerations, we shall accord to this important branch of Medicine all the attention that it merits, without forgetting that it offers only an ideal and an imperfect image of phenomena, and that it can not in any case replace the study of real nature, or take the place of direct observation.

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### § I. Theory of Coction and Crisis.

The theory which prevails the most universally in the Hippocratic works, is that of coction and crisis. It is met with at every step, sometimes isolated, sometimes combined with others; but especially is it united to the system of four elements and four humors. It forms an

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* Diction. des Scienc. Médic., the word System.

† Anat. Gén., Considerat. Gén., p. 13.

integral part and is the most characteristic trait of the ancient Dogmatism, and it is retained even in our time, while all its cotemporaneous doctrines have been abandoned.

The Asclepiadæ, of the isle of Cos, regarded disease as an association of phenomena, resulting from the efforts made by the conservative principle of life to effect a coction of the morbific matter in the economy. They thought that it could not be advantageously expelled until it was properly prepared, that is, until after its elements were separated and united with the natural humors of the body, so as to form an excrementitious material.

The vital principle that effected this preparatory work, as well as sustained all other physiological functions, has received various names among ancient authors, according to their notions of its particular attributes. Som ecalled it nature, φυσις, when they wished to indicate the totality of forces and phenomena over which it presided; motor, ενορμων, *impetum faciens*, to signify the prompt impulse which it gave to the whole machine; soul, spirit, ψυχη, to signify its immaterial essence, and the noblest of its faculties—the intellect. The word πνευμα, breath, designated, more particularly, the way in which the vital principle sustained itself, the substance from which it drew its nourishment: and the word θερμον, heat, expressed one of the most immediate effects, and the most indispensable to life.

When the morbid substance approaches the period of maturity, nature seems to redouble her efforts; the fever augments, the patient is overwhelmed, or delirious, all the symptoms are aggravated and announce the approach of a revolution; this was the moment of the crisis, or judgement of the disease. The day on which it was accomplished, the signs which preceded or accompanied it were termed critical, and required the special observation and attention of the physician. He must be able to discern whether these signs were good or bad, and predict, on seeing them, what will be the fate of the patient. He must respect the critical labor of nature, if it proceed properly, nor disturb it by violent remedies, and in no case attempt to aid the vital principle, unless in urgent necessity.

When the coction was effected, which might be known by the amendment of the symptoms, it only remained to evacuate the heterogeneous material. Nature often accomplishes this last effort, herself, and the disease terminates by a critical sweat, urination, or stools. But it also frequently happens, that the vital principle, fatigued and broken down by the efforts of the crisis, requires aid, and then the physician must come to its relief. To accomplish this, say the authors, he must push the material toward the emunctory, to which it naturally tends; that is, he

must give sudorifics, or purgatives, or diuretics, according to the indications of nature, whose faithful minister he must show himself to be, in all things. In this way diseases terminated, in the most favorable cases.*

But it might happen, that the coction could not be effected, or only imperfectly. In such cases, one of two things must occur: either the vital principle, overcome by the morbid element, succumbs, and the patient dies, or the struggle between the vital element and the morbid goes on, and a new effort at coction commences, and is continued for a limited number of days, in the same manner as at first. This second effort may have a termination, complete or incomplete, and so on successively.

The number of days necessary for the coction, or the elaboration of the morbigenous matter, was termed the critical period. The most perfect period was supposed to be the quaternary, or that of four days; next, the third; finally, in addition to these two, was the septenary, which had a high consideration.

In the treatise on Prognostics, section 20, we read as follows: "the same number of days which brings about the cure, or death of the sick, regulates the crises of fevers. The most benign, those which are accompanied with the most encouraging signs, terminate in four days, or sooner; the most malignant, or those accompanied with the most menacing signs, destroy life in four days, or less: such is the limit of the first period. The second period reaches the seventh day; the third, the eleventh day; the fourth, the fourteenth day; the fifth, the seventeenth day; the sixth, the twentieth day. Thus, these periods, in the most acute diseases, go from the first, in four days, to the sixth in twenty days. But none of these periods, they say, can be calculated, rigorously, by entire days, for neither the year, nor the months, are counted by entire days. Still farther, by the same calculation, and same progression, we have a first period of thirty-four days, a second of forty, and a third of sixty days. The most difficult part of the diagnosis is, to determine from the beginning the favorable, or unfavorable termination of those cases in which the crises are slowest; for, in the beginning, all protracted diseases are very similar. It is necessary to make observations from the first day, and then examine the state of things, after each quaternary is passed; in this way, mistakes in regard to the termination of diseases are avoided. The nature of the quartan fever is submitted to a similar course. The good or bad termination of a case, when the crisis is reached in the shortest time, is more easily known, for the accessions are extremely dissimilar. The patients who will recover, have easy

* Œuvres d' Hippocrate, par M. Littré, T. V. Traité des humeurs, § 3, et als.

respiration, not much suffering, sleep at night, and offer otherwise encouraging symptoms: on the other hand, those that are to die, have dyspnœa, delirium, sleeplessness, and all the most alarming signs. Since these affections thus act, it is necessary to establish conjectures according to the time, and according to each additional period, in proportion as the diseases proceed toward the crisis. With women, the crisis, after accouchement, follows the same rule."*

In the above scale of critical days, it may be observed that each period is formed by adding the number four or three to the preceding one. To properly conceive of the origin of this progression, we must recur to the system of Pythagoras, already described.† The number four, it may be remembered, represents in that system all substances endowed with proper faculties, having an existence distinct from other beings, as God, man, a plant, or a mineral; hence it follows that the Asclepiadæ, inheritors of the doctrines and symbolical language of the Egyptians, were naturally led to designate by the number four the morbid entity come to its complete development. For the same reason, the number three, which represented the whole of the essential properties of all beings, might also indicate to them the plenitude of the faculties of the morbid entity.

If any doubt yet remains on the connection that exists between the system of Pythagoras and the theory of critical days, the following passage will remove them:—"A physician, says one, who neglects nothing that may contribute to the establishment of his patient's health, must observe carefully what passes each day. Among those days of even numbers, the most important are the fourteenth, the twenty-eighth, and the forty-second. This is supposed to arise from the perfection of those numbers, and the manner in which they are composed of other whole numbers. It would take up too much time to give their reasons: it will be sufficient to say that they refer to the ternary and quarternary."‡

As nature is not subjected to our arbitrary limitations, it often happens that the duration of diseases does not respond exactly to an exact number of ternary or quarternary periods; they were therefore obliged to change more than once the manner of counting critical days. Opinions varied very much in that respect, even in ancient times. The author of the treatise on Diseases developed in his fourth book a physiological and pathological theory, according to which all the odd days are assumed to be critical days. But this rule was found in many cases to be at fault,

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* Œuvres d' Hippoc., translated by E. Littré, Paris, 1840, T. II, p. 169.

† See page 83.

‡ See the Traité de la Grossesse á sept mois, § 3; translation of Gardeil.

so that they were forced to admit that the rule of odd days was exceptional in numerous cases. Hippocrates himself points out several. In the third book on Epidemics, section third, it is said that "all diseases offer, it is true, difficulties in crises, the absence of crisis, and a long duration, which was especially remarkable in those to which I refer: in some, the crisis was retarded for eighty days; in most of them the disease ceased without a distinct crisis."

Notwithstanding the vagueness that existed in the determination of critical days, the doctrine of crisis is maintained in our times. Pinel, one of the most philosophic spirits of our epoch, wrote at the end of the last century: "I suppose that no one is so little enlightened, as to think he can suspend, by the aid of remedies, the course of an acute disease, such as an essential fever, or a phlegmasia. On the contrary, he must commence by counting the days, from the beginning, so as to recognise what their actual period is. It is known that inflammatory fevers, as well as gastric, continue, in general, to the end of the first, second, and sometimes, third septenary; but the gastric remitting fevers continue to the sixth or seventh week, whatever method of treatment may be employed, and may continue many months, if exasperated by a too active treatment.*"

Landré Beauvais, author of a treatise on Semeiotics, expresses himself as follows: "Hippocrates, excellent observer and reliable historian, has established the doctrine of crisis. Asclepiades and the methodists, guided by prejudice, denied the crisis and critical days. They accused Hippocrates of being led by the dogmas of Pythagoras, or numbers, and they attacked Galen, who remained faithful to the principles contained in the writings of the father of medicine. Asclepiades had many imitators in succeeding ages; Celsus was the most illustrious; but can one adopt the sentiments of those who refuse to admit the crisis, when it has been so successfully sustained by Galen, Duret, Baillou, Fernel, Sydenham, Forestus, Stahl, Baglivi, Van Swiéten, Stohl and Pinel, and when every day, clinical observations confirm the views of these great masters."†

A medical opinion which has traversed so many ages, and come down to us supported by such respectable names, merits a profound examination. We must conclude, until the contrary is established, that it is not a pure play of the imagination, but that it has some foundation in the observation of the natural progress of diseases.

I will remark, in the first place, that the connection that exists be-

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*Nosogr. Philos. Introduction, p. 35.

†Diction. des Scienc. Médicales, the word Crisis, T. II, p. 376.

tween the doctrine of crisis and the dogmas of Pythagoras—a connection that it is vain to deny—proves nothing for or against this doctrine. The real question is, are there diseases which proceed, or seem to proceed from some solid, liquid, or gaseous, deleterious substance, introduced into the economy, exciting there a reaction, which is manifested by a succession of nearly constant symptoms? Now it is not doubtful that there are diseases of this kind. We cite, in the first place, fevers caused by vegetable emanations—formerly so common, and so destructive, which assume usually, a periodic form, as a quotidian, tertian or quartan. I will also cite the eruptive fevers, such as variola, rubeola, vaccinia, miliary, etc., which have well marked phases of incubation, eruption and desquemation. It is true, that certain authors pretend that these last diseases are of modern origin—I had almost said invention; but that is a controverted, and a very controvertible opinion, as I shall prove at a proper time. But admitting they are so, it cannot be denied that if new periodic diseases have arisen since Hippocrates, the old ones could become extinct, and in this hypothesis, there would be, therefore, a compensation.

Thus, then, there has existed, and there still exists a very numerous class of diseases, of nearly constant periods, and it is in a great measure, upon the observation of this remarkable phenomenon, that the doctrine of coction and crisis has been founded. Recall now a remark that I have already made, namely, that the attention of the Asclepiadæ was especially directed to acute diseases, and amongst these, principally to epidemics. The greater number of the clinical relations that have been transmitted to us, relate to epidemics. Now febrile affections, of regular periods, generally prevail as epidemics.

What then is the reproach that can be legitimately applied to Hippocrates and those who have adopted his theory of crisis? It is that of extending to all diseases that which is true only of a certain number; in a word, for having generalised too much an idea; and this is the most common defect of all systems, as has been already remarked.

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### § II. Theory of the Four Elements and the Four Humors.

After the theory of coction and crisis, that which prevails the most in the Hippocratic books, is the doctrine of the four elements, or the four elementary qualities, heat, cold, dryness and moisture, and the four cardinal humors, blood, bile, atrabile and phlegm. This doctrine was supposed to be an invention of the father of Greek medicine. Such is the opinion of all the commentators and historiographers, among others Galen, who extended and perfected it in his manner, and it reigned, exclusively, after him. The theory of four elements and four humors,

harmonizes very well with that of coction and crisis, of which it appears to be the complement.

Empedocles, of Agrigentum, who has been mentioned heretofore, was the first who introduced into physics, the consideration of four elementary forms, the first termed terrestrial or solid, the second aqueous or liquid, the third aerial or gaseous, the fourth igneous or ethereal. The latter, of which the ancients had only a vague notion, corresponds to what is termed an imponderable fluid, in modern physics.

Empedocles admitted, according to the doctrine of his master, Pythagoras, two principles in every thing: the one active, intelligent and impalpable, which is God; the other passive, and devoid of properties, having no definite form, but susceptible of assuming any that the Creator might give it, named amorphous matter. The philosopher of Agrigentum, conceived, also, that amorphous matter had received from the Supreme Intelligence, four fundamental or elementary modes of existence, and these four principal modalities of matter, variously combined, constituted all the bodies in nature; so that, according to this system, there is no material substance which does not include four elements, united in variable proportions.

The element which constitutes the largest proportion in a body, determines its permanent form: thus, the terrestial element predominates in solids; the aqueous in liquids; the aerial in vapours or gases; the igneous in the ether or imponderable fluid. In this way, this philosopher explained the varieties of bodies, at the same time preserving the Pythagorean doctrine of homogenity in matter.

The assumption of four elementary or primitive forms was not, as may be thought, the dream of an exalted imagination; the attentive observation of some very remarkable phenomena had suggested the idea, and gave it the appearance of reality; thus, water can pass from a liquid to a solid or gaseous state, without changing its nature; so, also, in the phenomenon of combustion, the wood, especially when it is green, oozes out water from its surface, exhales smoke, which the ancients regarded as crude air, deposits ashes, the terrestrial element, and lastly, gives off light and heat, or fire, the most subtle of the elements, which ascends, and is dissipated in the ethereal regions. Here the chemical analysis of the ancients stopped.

I will not carry farther this exposition of the four elements, or four primitive forms which served to explain the infinite diversity of the body without destroying the dogma of the homogenity of matter. It is sufficient to have shown that it was neither ridiculous nor absurd before the discoveries of modern chemistry. I will add that the chemists themselves, after having augmented indefinitely the number of ele-

ments, now tend to limit them, and are not far from returning to the dogma of the homogenity of matter, by the theory of equivalents.*

Such was, at its origin, the doctrine of the four elements, which Plato and Aristotle adopted, and sustained by new and extremely subtle considerations, as we shall see hereafter. This doctrine, when Hippocrates appeared, had all the force and attraction of freshness, and it is not astonishing that that philosopher made it the basis and model of his medical theory. We now proceed to show by what course of reasoning he was led to it.

He commences by saying, that to properly understand man, it is necessary to study him with the lights of Medicine, *i. e.*, in a state of health, and disease. He refutes the opinion of the philosophers who pretend that man is formed of a single element, and relies especially upon the little accord that exists among them, as to the nature of that unique element — some affirming that it is air, others water, others fire, and others earth. "Now," says he, "since they all contend for the same principle, and yet all come to different conclusions about it, it shows that they do not properly understand each other."

"In regard to physicians," he adds, "some contend that man is all blood, others that he is all bile, others all phlegm, and some all gas. Each one adopts the same mode of reasoning; they insist that the being is one, whatever name may be given to it, and that this unique substance changes its form and its powers accordingly as it is affected by heat or cold. As for my views: I say, that if man were a simple element or being, he would never feel pain; for what could excite pain in him if he is only of one substance? Suppose that he was susceptible to it: the remedy must be single also; but we know that there are various remedies for pain. He who affirms that man is all blood, ought to show himself unchangeable, or at least, he should assign a season, or an epoch of life, in which we can see in man nothing but blood; for in order to be sure that his opinion is correct, we should be able to see, at some time or other, at least, that only in man which exclusively constitutes him, viz: blood; these remarks are applicable also to the assertions of those who pretend that he is all bile or phlegm.

"At first the generation of man can not proceed from a single substance, for how can a single substance be developed without a union with something else? If it does not mingle with other different beings, of the same nature, there could be no generation of an economy like ours. Moreover if the heat and cold, the dry and humid, are not pro-

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* And especially is this further illustrated in the correllation of the physical and vital forces.—*Trans.*

perly tempered together, if one predominates too much, the generation could not take place. In like manner when a man dies, each of the elements of which he is composed takes a different direction, according to its nature — the humid to the humid, the dry to the dry, the heat to the heat, and the cold to the cold.

"The human body contains blood, phlegm, and two sorts of bile, yellow and black. Such is its nature, and their condition determines the state of health. It is healthy when each of these fluids is in due proportion to the other as to quantity and character, and especially when they are well mixed; it is diseased when any one is in excess, or lacks its due proportion to the rest, or is evacuated without being properly mixed — for when it is thus evacuated, not only the region where the admixture should take place must be affected, but still more, the organ through which it passes off, becomes surcharged and suffers painful struggles.

"I have said that I would show that the things of which man is composed always remain the same. This is generally admitted, and is proved by the examination of his nature. Now the blood, phlegm, yellow or black bile, by common consent, are always the same, for neither of these words has an equivocal or doubtful meaning. Again, these elements are very distinct in their nature; the phlegm has no resemblance to the blood, nor the blood to the bile, nor the bile to the phlegm. How then can they be confounded? — for these differences are recognized by the sight alone, as they differ very much in color. So, if they are touched, there are manifest differences in the sensations they impart. So also, are they unlike in temperature and consistence. If a remedy is taken that acts on the phlegm, it is phlegm that is discharged; if it acts on the bile, that is cast off; or if the body is wounded, it is blood that flows out. These results occur at all seasons, all periods of life, and at all times. Thus man is really constituted of four humors, which are manifest to our senses, and there is no need of special arguments to prove it." *

The author, after having established his doctrine by unquestionable arguments and observations, and having refuted the objections of those who professed contrary views, continues thus the exposition of his own: "The phlegm augments in man during the winter, and this humor is more analogous in its nature to that season; for it is the coldest of all, as can be readily proved. If the phlegm, blood, and bile, are touched successively, it will be found that the first is the coldest. In the spring the blood augments; for there is an affinity in its nature

* De la Nature de l'Homme; Gardeil.

with the constitution of that part of the year — it is hot and moist. The bile increases in summer for the same reason, and the atrabile becomes most abundant and strongest in autumn."

Hippocrates then explains summarily, how diseases are engendered, namely, by the influence of the seasons, or by the regimen, the temperament, or the air that is breathed. Finally, he establishes a general rule for their cures, which consist, according to him, in inducing action in the system contrary to that produced by the cause of the diseases.

Whatever view may be formed of this system, comparing it with our present knowledge, we are forced to admit that united to the doctrine of coction and crisis, with which it perfectly affiliates, it offers an interpretation, sufficiently reasonable, of the physiological phenomena which had attracted the attention of the observers of that epoch. In fact, all phenomena, of whatever character, can only result from the combined action of vital and physico-chemical forces, that act similtaneously on the animal economy. Now, the theory of coction explains the laws by which the vital principle is supposed to exercise its influence; that on the elements and humors exhibits the influence of the inorganic forces, and the laws according to which that influence is applied to organized bodies.

These two theories united, constitute the ancient Dogmatism — a doctrine originally of the school of Cos, and of which Hippocrates is regarded as the principal author. In that doctrine the humors play the part of secondary or physiological elements; they are agents endowed with diverse, or even contrary properties, placed at the disposal of the vital principle, which alone gives to them a good or evil direction. But these agents can contract, sometimes, deleterious properties, in consequence of external forces not controlled by the vital principle.

The external forces admitted by the ancients, as we have seen, are of four kinds, heat, cold, dryness, and moisture, which may be easily reduced to two by the augmentation or diminution of caloric and moisture. This shows the poverty of the physics and chemistry of the ancients. They had no idea either of atmospheric pressure or its composition; neither of electricity, the chemical phenomena of respiration, nor a multitude of other phenomena and influences. They possessed even on the effects of caloric and moisture, but vague and superficial perceptions, and considered their actions only in relation to the humors of the human body, without taking any account of the not less important modifications which they produce upon the solids. Besides, they attributed to the humors imaginary qualities, derived from the elements that were supposed to predominate in their composition. They

also conceived relations to exist between these humors and the seasons of the year, which were more poetic than real.

The Asclepiadæ, imbued with the same dogmas as Pythagoras, believed in a perfect harmony between the universe, or the macrocosm, and man, or the microcosm. For this reason they admitted four humors in their physiology, though observation could only distinctly demonstrate three — the blood, bile, and phlegm. The fourth humor was an object of much uncertainty and obscurity, among the Hippocratic authors. Some assimilated it to the terrestrial element, and called it atrabile, attributing to it extremely active properties, and regarding it as the cause of the gravest affections; others assimilated it to the liquid element, gave it the name of water, and regarded it nearly as a nullity, in the production of diseases. It was said, by one: the heart is the reservoir of the blood, the head of the phlegm, the liver of the bile, and the spleen of the water.

If the physicians had been less subjected to their philosophic prejudices, and relied more upon observation, they would have been able to discover more reasonable relations between the humors of the body and the seasons of the year; they would have found, for example, that the prolonged action of cold, damp weather, at the close of autumn and the commencement of winter, in the temperate climate of Greece, developed the lymphatic or pituitary temperament and humor, as well as catarrhal affections; that the damp, warm constitution of the weather at the end of winter, and in spring, disposed to open inflammatory diseases and hemorrhages; and lastly, that the dry heat of summer and the beginning of autumn, increased the secretion of bile, and favored the prevalence of inflammatory bilious and putrid bilious fevers; but to see this they would have had to renounce the Pythagorian harmony of the four humors with the four elements and four seasons.

Notwithstanding its errors and imperfections, the doctrine of Dogmatism is the most ingenious and the most complete of all the medical doctrines of antiquity; it responds better than any other to the wants and tendencies of antique science, and it was received and adopted with admiration, not only by the generality of physicians, but also by the greatest philosophers. We shall have occasion to speak of it more than once, in considering the modifications it has undergone in its long reign.

What shall be said now of those who attributed to Hippocrates the glory of having separated Medicine from philosophy; and of those, on the contrary, who attributed to him the glory of uniting philosophy with Medicine? It must be said of them, what Hippocrates says of

those who saw only one element in man: they do not well understand themselves.

It is certain that Medicine had been philosophized upon before Hippocrates; it is also equally certain that Hippocrates philosophized as others, and that he shared the prejudices of his age in many particulars; but in some respects his philosophy is distinguished from that of his cotemporaries by greater and more profound wisdom. He reminds the philosophers and physicians, continually, of the maxim too often neglected by them, and even by himself, *that the nature of man can not be well known without the aid of medical observation, and that nothing should be affirmed concerning that nature, until after having acquired a certainty of it, by the aid of the senses;* a maxim diametrically opposed to the dogmas of Pythagoras, and which includes the germ of an entirely new philosophy, that Plato misconceived, and of which Aristotle had only a glimpse, as I shall show hereafter.

The other theories that are found in the Hippocratic collection, have not now the importance of the two preceeding; they are only met with in a small number of works, sometimes in one alone. They were never adopted by a large number of physicians, and must be considered as the individual or particular opinions of some writers. A few of them, however, have furnished the first suggestions of the great systems invented at later periods, and on this account they merit special attention; for they show us the origin and connection of the prevalent ideas of past ages.

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### § III. Theory of Fluxions.

This theory, one of the most simple that can be imagined, is regarded as being anterior to Hippocrates. It is predominant in two treatises, viz., those on the Regions in Man, and on the Glands. A few extracts from these two books will give us a sufficient idea of the doctrine.

It is said in the first, "Fluxions are caused by cold, which causes the condensation of the tissues and veins of the head, if the cold strikes them when they are heated; then by their contraction the humors contained in them are expelled. All the tissues are obliged to pour out their fluids when they contract. The contraction of the skin, by compressing the roots of the hairs, causes them to become erect. The liquids thus compressed are diffused in every possible direction.

"Fluxions are also caused by heat, because the tissues become rarified when they are heated, their pores enlarge, and the humor they contain is attenuated, so that it flows easily when compressed. The greater the

rarification, the more the effusion, especially when the tissues are full of humors; what they can no longer contain, escapes. When a channel is once formed, they pass off by it until the body, becoming dry, contracts and closes the passage. As all parts are in communication, the moisture that exists is attracted by the dryest. The body being permeable, it is easy, in those parts which have not imbibed so as to augment their volume, to attract the humors; especially is this the case, if the inferior extremities are dry, the superior being charged with humidity; for there are more veins in the upper part of the body, than in the lower, and the soft parts of the head are thinner, and need less humidity. The fluxion in this way becomes easy from the moist parts toward the dry; beside this, all the dry parts attract moisture. Nor can it be denied, that the humors tend downward, naturally, however light the force may be that affects them."

It would be difficult to exhibit, in so few words, more ignorance on the conformation of our tissues, and the laws of physiology and physics. It will not be expected that I should seriously attempt to refute the gross errors that are crowded together in these few lines. I will simply say, that the body of man is there likened, sometimes to a sponge, which absorbs water or allows it to escape, according to the degree of pressure acting upon it; sometimes to a sieve, the pores of which are dilated by heat, giving a free passage to the fluids, or contracted by cold, and preventing their passage. There is no more mention of the organic or vital forces, the effects of which are so manifest and wonderful, not only in the human economy, but also in the vegetable, than if they did not exist at all!

The author of this book admits seven species of fluxions: the first tends to the eyes; the second to the nose; the third to the ears; the fourth to the chest; the fifth to the spinal marrow; the sixth to the vertebra and general tissues; finally, the seventh, which flows slower than any other, producing sciatica and rheumatism. In this way he explains the origin of all diseases.

As to the treatment, it is worthy of such an etiology. I will quote only one method, which will be sufficient to give an idea of others. "To cure convulsions it is necessary to place a furnace of coals on each side of the bed, and give an infusion of the root of mandrake, but not so strong as to excite frenzy, and apply hot cloths to the ligamentum nuchœ." The translators and commentators are much at a loss to find any common sense in this passage, because the curative method laid down is so absurd; but they omit to notice, that that method proceeds, naturally, from the etiology above given. In fact, if convulsions result

from too much humidity in the head, it is entirely natural that an effort should be made to diminish this excess of humor, by a large supply of heated furnaces and hot bags.

I will complete the exposition of this theory, by some extracts from a little monograph on the glands. The author commences thus: "The structure of the glands is such as I have just stated. They are of a loose, spongy nature, and of a fatty color. Their tissue is not like that of other parts of the body, and may be distinguished from all other parts by being granular. They have many veins. When they are cut, the blood that flows out is whitish and watery. When handled, they feel like greasy wool, and if strongly pressed between the fingers, a juice oozes out, which looks somewhat like oil, and their organization is destroyed.

"The glands are found in great numbers in the interior of the body: more numerous in the cavities than around the articulations. They are also, found in all moist and sanguineous regions. Some attract and take up the humors that come from above, into the cavities, others absorb those which are poured out in large quantities in the cavities themselves, or those which are expressed by the working of the joints. Thus they prevent the superabundance of humors in the tissues. Observe too, that where there is hair, there are glands also. There is a connection between the hair and the glands; these attract the humors, as above said; the hair profits by it: it is developed by the nourishment which the glands procure, and grows by leading outward the excess of humors. In dry parts of the body we see neither hair nor glands."

A little further on, the author observes, that certain parts, as the intestines and the omentum, have glands, but no hair, but he is not embarrassed to explain this anomaly. "We see," he says, "that in marshes and very wet places, the seeds do not germinate; they perish, smothered by excess of moisture. So in the intestines, the abundance of fluids prevents the development of glands, and there is, therefore, no hair."

These efforts to explain everything, often throws the best minds into strange ramblings. We shall see many, and even celebrated examples of it. The philosophers and physicians of antiquity would have thought themselves without reputation, if they had announced a single phenomenon without giving some interpretation of it. Rather than fail in this, they made use of the most ridiculous explanations. The little treatise that suggests these reflections is certainly not one of the worst executed of the Hippocratic collection; it exhibits its subject, on the contrary, with all the details and comprehensiveness that the anatomical light of that epoch would allow, yet what vagaries it contains!

One example more, and the last: "The head has glands; the brain itself resembles a gland, it is white, and divided into lobes, like glands. It produces, also, the same effects, abstracting from the head, as before said, the humors which there abound. The brain relieves the head from humors, and distributes them to the extremities, by means of currents that flow in different parts. Observe, also, that the brain is larger than the glands.* The hair on the head is longer than elsewhere. ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ ⁂ It is from the continued flow of the humors toward the head, which can not contain them, as well as from their unceasing currents toward the parts which need them for their nutrition, that proceed the alteration of humors, and thus diseases. Either of these results, if not checked, may exhaust nature entirely, although there are great differences in the intensity of diseases."

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### § IV. Theories Founded on the Consideration of Two Elements.

The four elementary forms of matter described in the chapter before the last, are so well determined, and so constantly referred to in all these works, that it would be impossible to mistake them; beside, no ancient author has attempted to deny their existence; but some have assumed that only two of them are primitive elements, or even one alone, the others being regarded as secondary.

I. In the little treatise, entitled, "On Fleshes, or the Origin of Man," fire and earth alone, are designated as elements. Fire is the active principle, which the author supposes to be endowed with intelligence, wisdom, and will; he confounds it with the soul of the world, or God. The earth is the passive principle; it receives, by the action of fire, or its mixture with it, all the apparent forms of the body. The physiology developed in this book is very odd, as the following extracts show:

"I think that what we have called heat is immortal, that it knows, sees, and understands all things in the past and in the future. When all things were created, it was developed in larger quantities in the upper regions. The ancients, I believe, gave it the name of ether. The other element, which remained below, is called the earth; it is cold, dry, in active motion, and contains much heat. The third part, which is located in mid-air, is somewhat warm; the fourth, which is nearest the earth, is damp and crude. After all had been impressed with a circular

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* The author does not include the liver among the glands.

motion, they became mingled, and much more heat accumulated in some parts of the earth than in others. The quantity was considerable, but the volume was small."

"The earth, after a long time, becoming dry, a mould was found on it, as is often on old clothes; and after another very long lapse of time, what there was of fat and moisture in this mould, proceeding from the earth, being at last burned, formed bones.

"That which was sticky, and contained the cold element, could not burn, though made hot, nor become moist. It then took a form different from the rest, and was developed into solid nerves, for there was no cold in them.

"The veins required much of the cold element. The exterior part of this element, acted upon by the heat, formed a dense envelope and became a membrane. The interior of the veins, melted by the heat, became liquid.

"In this way, in man and in other animals, the wind-pipe, the stomach, the abdomen, and intestines, all became hollow.

"The cold element continually growing warmer, the exterior was burned and became an envelope or membrane; the interior cold that existed, being neither fatty nor viscous, became humid, and was changed into a liquid."*

The author explains, after the same manner, the formation of all the structures of the human body, their nature, nutrition, and various functions.

"The brain," he says, "is the center of the cold element; the fat, that of heat.

"The veins that come from the belly and the intestines, continually attract or absorb what is thinnest, and most liquid in the food and drinks. After the mixture has become heated, the grossest remains and becomes excrement, and passes to the large intestine. The nutritive substance, reaching the various tissues, is distributed, furnishing to each what is to be permanent of its structure. These tissues, moistened by the nutritious juice, all grow by the hot, cold, viscous, fatty, sweet, and bitter elements.

II. The treatise on regimen, of which we have spoken in our article on hygiene, includes a doctrine which is very analogous to the preceding, but differs from it, in that water takes the place of earth, and is a passive element. The author commences by discussing the preliminary knowledge necessary to write well, on the regimen of man, and places in the first rank the knowledge of the human nature, of its

* Traité des chairs, ou du commencement de l'homme, §§ 2, 3, 4, 5, 6, 7. Gardeil.

origin, and the parts or elements that concur to form it. "If," he says, "a physician is ignorant of what man is made at first, and what predominates in him, how can he prescribe what may be useful to him." After these general physiological considerations, on which he dilates at large, he enters into his subject-matter as follows: "Man and all animals combine, each in themselves, two principles, very different in regard to their relative powers, but which concur for various purposes: namely, fire and water. These two principles, alone, are sufficient to act on all the rest, and to maintain the general movements. One without the other would not be sufficient for the animal economy, nor any other being. Now I will state the powers of each. Fire is the source of all motion, and water of all nutrition. Each one possesses certain necessary qualities; fire is hot and dry, water, cold and moist. They borrow, also, qualities from each other; fire borrows from water, humidity, for there is in fire a humidity that comes from water; water borrows from fire, dryness, for there is a dryness in water that comes from fire.

"Nothing is entirely lost, and nothing new is made; only different combinations are formed. Men think that what is born comes from a state of death, and what disappears, perishes, and that it is necessary to rely more, in this matter, upon the senses than upon reason, in which they are wrong. Listen to reason!" The author then enlarges upon this beautiful thought, but only spoils it by a miserable concoction of physics and metaphysics.

At last, he comes to the generation of man, which he explains as follows: "The mixture of semen is vitalized by agitation, and it draws its nourishment partly from different aliments, and partly from the air that penetrates the body of the woman. At first, the mixture is entirely homogeneous, but becomes swollen and rarified. It is next dried by the action of heat, which renders it firm, and consumes its internal humidity. That which is more firm in its nature, becomes compact and dry, and still being acted upon by heat, it hardens, and forms what are called bones and ligaments. Fire thus effects all the changes in the body, according to the structure of each part, by means of its effects upon moisture."

With this somewhat fanstastic anthropogeny, the author attempts to show connections, not less curious, between vital and astral heat. The heat of the abdomen, which he terms the cavity of humidity, is, according to him, under the influence of the moon: the heat which goes to the surface of the body, to the fleshes, (tissues), is similar to that of the stars; finally, the central heat of the body, which is carried by the vessels from within outward, is the most potent of all; it exerts an influence

analogous to that of the sun. "It is," continues our physiologist, "this central fire which directs every thing, according to the laws of nature, in an unseen, intangible, and noiseless manner. In it resides the soul, the intelligence, prudence, augmentation, motion, diminution, alternation, sleep, and wakefulness. It governs all things, every where, and at all times; being never in repose."

After making so poor an application of astronomical knowledge, he next passes in review, the most common occupations of life, such as melting of metals, fulling, shoemaking, woodsawing, architecture, music, and divining. He finds that each of these offers an imitation of the regimen of man—a similitude with certain acts of the economy. For example, in speaking of goldsmiths, he says, "the goldsmith washes the gold, beats, and melts it in a moderate fire. Intense heat is not best adapted to it. After being thus prepared, he employs it for every purpose. So man gathers wheat, washes, grinds and bakes it, and employs it for food, without using intense heat. It is submitted during digestion, to a notable change, by the mild heat of the body."

When Empedocles reduced the primitive forms of matter to four; when Hippocrates put forth his beautiful theory of coction and crisis, they both started on correct observations, both rested on the real relations, that a wise analysis had revealed to them; whilst the inventors of the two theories that we have just read, have established their syntheses, on false or trivial bases only, and by forced relations. They were anxious to invent something new, but have only succeeded in the hypothetical and ridiculous. It would have been much better to have followed the already beaten track, than the vagaries of a wild imagination.

III. To the physico-physiological systems, in which only two generative principles are allowed for the whole body, responds the pathological theory, according to which all diseases are supposed to proceed from two humors only. This last predominates in the two principal treatises on pathology, in the Hippocratic collection; but it is not pure, and exempt from admixture, for we see in them, also, the doctrine of four humors. The following is in substance, what we read in one of these treatises: "all diseases, if they are internal, proceed from the bile or phlegm; if they are external, from various accidents—such as excessive heat or cold, dryness or humidity. Melancholy, produced by black bile, causes paralysis.*" A little farther on, we read, "those whom atrabile torments become diseased whenever the blood is overcharged by bile and phlegm."†

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* Traité des Maladies, livre premiere, Gardeil.

† Ibid.

The second treatise on pathology, in which the theory of two humors reigns, is entitled "on *Affections*." In this, we find the same mixture of doctrines above stated, as may be seen by reading only paragraphs 1 and 36.

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### § V. Theory of One Single Element.

The physiologists who see in the animal economy only one element, do not pretend to say, by this, that man is formed of a unique substance, diversely modified, but they wish to inculcate, that among the elements that enter into the constitution of man, there is one which predominates over the rest, by its energy or its activity, and concurs in a preponderating, if not exclusive manner, to the production of physiological and pathological phenomena. To establish the unity of the active forces of nature, has been the dream of many physiologists and physicians; but up to this time, all the hypotheses conceived to this end, have been Utopian.

The Hippocratic collection includes two books in which the doctrine of a "single element" reigns. One, a treatise on embryology, is entitled, "on the Nature of the Child," and is well executed and complete enough for that epoch. It seems to be the conclusion of the book on Generation. The other is a very short treatise on general pathology, which has for a title, "On Air." The air, breath, or as the Greeks call it, pneuma, plays the principal part in the two treatises, but its influence is considered in a much less clear and exclusive manner in the first than in the second.

We read in the latter as follows: "An important thing to discover, is the cause of diseases — the origin, the source of the evils that are engendered in the body. Whoever can comprehend the cause of a disease will be capable of curing it, by employing a remedy which is the opposite of the evil from its commencement."

After having shown the necessity of going back to the cause of diseases, to effect their cure, the author continues thus: "The nature of all affections is the same; they differ only in relation to their seat. I think that they only show themselves under so many different forms on account of the great diversity of parts where the disease is located. Their essence is one, and so is the cause that produces them. But what is this cause? This is what I will endeavor to explain."

"The body of man is nourished by three things — food, drink, and air; he eats, drinks, and breathes. The air in the body is called spirit, or breath; that external to the body is called wind. It is the breath that produces the greatest phenomena, and its influence merits all our

attention. Nothing can be done without air; it is everywhere present; it fills the immense interval that separates the earth from the heavens; it is the food of fire; how could fire subsist without it? It could not exist long. It is not difficult to conceive that the interior of the sea participates equally in its benefits. The animals that swim there could not exist without respiration. There is nothing, in fine, that does not feel its effects.*

The author examines next, more particularly, the influence of the breath for the support of human life. He observes that its influence is uninterrupted; that man may abstain more easily from drinking and eating than breathing, from which he concludes that, air, being the thing most indispensable to the human economy, is also that which occasions in it the gravest and most frequent disorders. "Thus I can conceive that the principle cause of disease is in the air. This may be too strong or too feeble, or be precipitated in the body, or enter it charged with miasms. It suffices to have established this as a general principle; then, by descending into details, I will explain how each disease, in particular, proceeds from the breath or air."

Because the air is one of the most necessary things to life, and if you please, the most necessary, does it inevitably follow that it is the unique source, or at least the most common source of diseases? This does not appear to me to be demonstrated. But I do not insist on this general objection; it is particularly in the face of facts or detailed observation, that our systems are demolished. Let us see how the pneumatic system stands this test; this will dispense with the necessity of longer argument.

The fever which supervenes after an improper diet, is explained, according to this system, as follows: "Much food introduces necessarily much air; for the air enters more or less into the body, in proportion to the quantity swallowed of liquids or solids. For this reason, wind is belched up after eating or drinking too much. The air being thus compressed, bursts the little cells in which it is contained, and mounts upward. The body swells, by the excess of air, and the food remains in the stomach, prevented by the great quantity of air from passing into the intestines. The air is diffused into all parts of the body, and cools even the most sanguineous portions; it goes even to the origin and source of the blood, whence it is spread everywhere, and produces the shivering that precedes fevers. The more air, the more refrigeration, and the greater the shivering."

I will limit here my quotation; the reader is, I think, sufficiently

* Traité des Vents, § 1. Gardeil.

edified on the value of this pathological system, by the explanation which is offered for the first symptoms of fever. Let him guard himself, nevertheless, from sentiments of pity toward the ancients, on account of the theoretical errors he discovers in their writings; let him remember that in regard to theory, even the most eminent moderns are not exempt from illusions, which will, in a future day, excite the smiles of those who shall look upon them in another and superior light to ours. The deceptions of antique science should render us circumspect, and cause us to accept with reserve the assertions of cotemporaneous science.

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### § VI. Theory of Any Excedent.

We have seen, in the preceding chapter, synthesis pushed to its utmost limit, and all the phenomena of the animal economy assimilated to each other, and united by the bond of a common cause, notwithstanding their infinite variety and enormous differences. But in order to arrive at that, to perceive in the formation of man, in the development of his parts and the exercise of his faculties, only the various modifications of one single agent, such as air or fire, it was necessary to clothe this material agent with imaginary faculties — to suppose it possessed of instinct, intelligence, and will, which no observation could demonstrate; it was necessary, in short, to torture the facts, and create an ideal world, such as is seen by those patients to whom all objects appear of the same color.

These Utopias that the mind invents, by means of abstractions, in the solitude of the cabinet, vanish, ordinarily, in the presence of the real world, or phenomenal truths. To dissipate them, it is only necessary that they be compared with daily observations — to test them by the necessities of practice. This is done in a very creditable manner by the author of the theory which we now proceed to examine. The work which contains it is entitled, "*On Ancient Medicine,*" and is justly considered one of the most creditable of the collection. Going back to the infancy of the Art, it developes its principles, traces its progress with much sagacity, and indicates the best method to follow, to insure its progress in the future; it lays, in short, the true foundation of medical philosophy.

The critics and historians are nearly unanimous in classing this little work among the writings posterior to Hippocrates. M. Littré, alone, of moderns, charmed by the excellent doctrines contained in this book, is not willing that any other than that illustrious man shall have

the honor of its authorship.* The principal document on which he bases an opinion contrary to the common sentiment, is a passage from Plato, in which that philosopher, without designating precisely the book of Ancient Medicine, seems to make allusion to it. I avow, that after having read the passage, and the learned commentary with which M. Littré accompanies it, I am still with the common opinion. I have preserved, also, in the passages which I quote from the book, the translation of Gardeil, because it is on that translation that I made my first study, and consequently it is better adapted to my arguments; besides, it does not differ materially from that of M. Littré; for it is seen by comparing them, that these interpretations express the same ideas in different forms.†

The author opens with an argument, in which he shows that Medicine has not been founded on uncertain or obscure hypothetic opinions, but on the manifest observation of the good or evil results which follow a certain regimen and treatment, or action. He asserts, that the best method for making any improvement on the discoveries of past times is, not to jump foolishly into eccentric and unknown ways, but follow with perseverance the beaten route of experience, which alone will conduce to real progress.

Like all the hypotheses emitted at that epoch, to explain the phenomena of the animal economy, that of the four elementary qualities had for

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* He expresses himself about it as follows: "The book, Ancient Medicine, so remarkable for the correctness of judgment, and depth of thought, is no less so in the beauty and excellence of its style. The arrangement is worthy of its matter. The periods, generally long, are constructed with perfect regularity; the members of the phrases are balanced and finished in a way to please the ear, as well as the mind; the style, clear, and full of truthfulness, is always grave and firm, yet, nevertheless, it is enriched, (se colore) from interval to interval, in a way that shows a writer, who, master of his subject and of himself, is restrained within the limits of a natural taste. It is certainly a fine specimen of Greek literature, and a finished model of scientific discussion, on the general and most important points in Medicine." (Œuvres d'Hippocrate, De l'Ancienne Médicine, page 565.)

† I can only summarily indicate the reasons which make me take the common view. 1st. The book of Ancient Medicine refutes the system of four elements, which was that of Plato; it proclaims the superiority of the experimental method, and Plato, as we shall see hereafter, is the Corypheus of an entirely opposite method. How then could this philosopher have proposed, as a model, a doctrine contrary in all points to his own? 2d. The passage in Plato, considered in itself, seems to relate, according to Galen, as well to the book, on the Nature of Man, as it does, according to M. Littré, to the work on Ancient Medicine. (See the introduction to the Œvures d'Hippocrate, by M. Littré, t. 1, p. 294, et suiv., and to the first paragraphs of the book on la Nature de l'Homme.)

its support the most respectable authorities, such as Hippocrates, Plato, Aristotle, and the majority of physicians; but our philosopher boldly attacks that hypothesis, and refutes it in an entirely special manner.

"All those," he says in the commencement, "who have undertaken to speak or write on Medicine, and who have established their doctrines on the hypotheses of cold or heat, of dryness or moisture, reducing thus to one or two principles the causes of the death and diseases of men, are manifestly mistaken in the greater part of the things that they have advanced. I think, therefore, in this art it is not proper to have recourse to vain conjectures, as is necessary in treating of things entirely above our appreciation, and which are of no benefit to those who undertake to discuss or write about them."*

After pointing out, rapidly, what it is necessary to avoid in the study of Medicine, the author indicates, immediately, what it is proper to do, and his entire method may be summed up by the following aphorism: Observe attentively what is useful or injurious to health; examine in what each thing is good or bad; but put no subtlety in this research; hold simply and purely to the testimony of the senses.

This method was not entirely new; Hippocrates had alluded to it, somewhat, in his work on the "Nature of Man," but it was not expressed in terms as formal and explicit as are found in the work on Ancient Medicine. The author of this labors constantly to join example to precept; he appropriates to himself, in some degree, this method, by the developement he has given it, and the proofs by which he sustains it.

"It seems to me, primarily," he says, "that in treating of the healing art, we must advance views, the accuracy of which every one can appreciate, because the discourses and researches of physicians should aim only at the diseases to which every one is subject. It is, therefore, necessarily the observation of the manifestation of good or evil results which has led to the search for and discovery of this Art. Indeed, it has been discovered, by observing, that the sick were made worse by the use of the same food that healthy men employ, which is still verified every day.

"What difference can be put between the invention of a man who has marked out the regimen suitable to the sick, who practices what every one calls Medicine, and who is recognized, generally, as a physician, and the invention of him, who, in the earliest times, changed the ancient, wild, crude food, for those various preparations of aliment now in use. For myself, I think it is the result of the same method—a similar discovery. The first led to the suppression of food, too gross to

* De l'Ancienne Médicine. § 1, 2. Gardeil.

be assimilated, even in a state of health; the second, has interdicted aliment too indigestible in certain cases, considering the particular circumstances. There is no other difference, according to my view, except that the field of the latter, being more varied and extensive, requires, consequently, more discrimination aud experience; but the first invention is nevertheless the mother of the second."*

In this way the author refers the creation of Medicine to the first essays made by man to ameliorate the conditions of his existence. He demonstrates that the same instinct, which led him, so early, to make a choice among the articles of food at his disposal, prepare them by cooking, and in various other ways, for the purpose of gratifying his taste and rendering digestion more easy; the same instinct, I repeat, also suggested to him to seek means to alleviate pain; and that experience taught him, gradually, not to follow the same regimen in disease as in health, and to employ for his restoration to health, a variety of means.

The first rules of hygiene and therapeutics, not being the fruit of any hypothesis, but of experiment, he concludes that we may not hope for perfection in these sciences, except by the experimental method. "Every man," he cries out, "who rejects approved rules, and takes a new path, and boasts of having added something to the art, deceives himself, as well as others." He proscribes all the transcendental speculations in which men were in the habit of indulging, in his times, on the nature of man, and the essence of diseases. He regards them as a mere amusement—a play of the imagination.

"There are," says he "certain sophists, among whom may be counted even some physicians, who pretend, that to comprehend Medicine well, it is necessary, in the first place, to understand what man is in his nature, how he was first made, and from what he was formed. For myself, I think that all which the sophists wrote on the human nature, is less useful to physicians than to the makers of books, and that we can not hope to arrive at any certainty touching the constitution of man, unless we obtain it by medical observations. All that is necessary for any practitioner, who wishes to succeed in his art, to understand concerning nature, is the relation of man to his food and drink, and the changes which different kinds of these may effect in him."

We see with what sagacity our philosopher connects the question in physiology with the experimental method. He does the same for the problems of pathology and therapeutics. If it is required, for example, to explain the generation of diseases, he does not have recourse to occult causes, such as elementary fire, or radical moisture, but to causes apparent

* Traité de l'Ancienne Médicine, § 5.

and appreciable by everybody, such as excess of eating and drinking, the fault in preparation, or the bad quality of articles of food. He does not deny that the excess of heat or cold, of dryness or humidity, may become, in certain cases, the causes of diseases; but he insists that these primitive elements do not possess the character of morbid agents in all affections, nor even in the greater number, and he proves it from examples drawn from daily observation.

"Let us take," he says, "a man of feeble temperament. Suppose he eats grain from the garner, with raw flesh, and drinks pure water; this will cause him much pain, his stomach will become deranged, his body waste away, and he will not live long. What must be given to him? Heat, cold, dryness, or moisture? If it is pretended that either of these elements has caused the disease, the cure is to be effected by employing its opposite. The surest and promptest remedy will always be found to be a change of food: to give bread instead of grain, cooked meat instead of raw flesh, and to add wine to his drink."*

The substances on which man sustains himself are endowed with secondary qualities, such as bitter, saline, sweet, acid, and many others, the effects of which are more sensible, and more persistent than the effects of the primary qualities; from which, our author concludes that the first more frequently give rise to diseases than the last. He represents the action of the secondary principles, on the animal economy, as follows: "There are in man, bitter, salt, sweet, acid, and a hundred other similar humors of different powers, according to their quantity and degree of energy. All these things, when well mixed and tempered by each other, are harmless and unfelt; but when one of them is separated, and is alone, it is felt, and makes great havoc in the body. It is the same with articles of food; those which are not fit for use, are either bitter, salt, acid, or too strong; on this account they cause the same inconveniences as the humors of which I have spoken; but those which are suitable for us, have none of these violent or excessively strong qualities."

In the other theories, no account is made of secondary qualities, because they are regarded as simple compounds, but nothing proves that they are so. No observation or analysis has shown how the bitter, salt, sweet, and acid resulted from the combination of heat, cold, dryness, or moisture. It was, then, just as rational to study the effects of secondary qualities as those that were pretended to be primary. It was rational to observe how each of these principles acted, either when manifested spontaneously in the natural humors of the body, or when introduced into the economy by alimentary substances.

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* De l'Ancienne Médicine, § II.

The following extract shows the general course of action of these violent humors, according to this system: "We have," says the same writer, "as above shown, one example, among others, which seems to me to be clear and conclusive. When we have a stoppage in the nose, from a cold, and a coryza supervenes, is it not true that this humor becomes more piquant and caustic, in proportion to the abundance of the discharge; that it causes the nose to swell, which becomes inflamed and heated to such an extent that the heat may be felt when the hand is carried to it? If the same fluxion continue long, the humor makes excoriations on this hard and fleshless part. This ardor is at length dissipated; but how? Not while the humor flows, and there is inflammation, but when the humor becomes thicker, less sharp, more concocted, and perfectly tempered."

"It is the same for all the other derangements that I suppose to proceed from the acridity and severe nature of the humors; they cease only when the humors are all matured and tempered. How many times do we see fluxions from the eyes, caused by every sort of acridity, which ulcerates the lids, excoriates the cheeks, breaking up and destroying even the thick membrane that envelopes the pupil of the eye! When and how do pains and inflammations here cease? It is only after the humors have been matured, become denser, and have been changed into purulent matter. Now this coction is effected by the proper tempering of the humors."

The author cites still other examples, and concludes in these terms: "Must we not take, for the cause of a disease, that which, when appearing in one form, is invariably followed by this disease, then, changing, brings about a corresponding change in the state of the disease, and, at last, by disappearing, leaves the patient without any affection."

The rule here laid down to discern the causes of diseases, is not as well founded nor as infallible as the author thinks; in following it without discernment, we would be liable frequently to take for the cause of a disease, that which is only an essential symptom or constant effect. Thus, in the examples reported above, the acrid humors which flow from the nose in coryza, and from the eyes attacked with ophthalmia, are nothing more than symptoms or effects, that accompany these affections nearly as constantly as the shadow does the body. The author is then mistaken in supposing these humors to be the causes of the concomitant diseases, and the pathogenetic rule that he has laid down admits of many exceptions. Nevertheless, his theory is less erroneous than any of the preceding that I have cited, because it never, or very rarely ever, forsakes observation; while the others, disregarding observation, lose themselves almost immediately in the shadowy field of fictions. If it is

untrue, to say that the humors which flow from the eyes and nose when these organs are diseased, are the primary causes of the disease, it is nevertheless certain that these humors give rise, at least, to some secondary accidents, such as ulceration of the lids, and margin of the nose, etc. They are thus at once cause and effect, as are all organic phenomena.

Neither has the author of the Treatise on Ancient Medicine totally overlooked the solid parts of the body; he says something of them in the last paragraphs, and insists on the necessity of studying their structure and configuration. If the reader finds the reflections of our physiologist, on this subject, deficient in development and depth, I shall not deny it; but I will say, that it is also necessary to bear in mind the little advancement of the lights of his age on this branch of physiology. It must be recollected that at that epoch descriptive anatomy was in its infancy, and that pathological anatomy did not yet exist, from the impossibility of making regular dissections. This writer has done all which was possible to do in this respect. By insisting on the necessity of acquiring positive notions concerning the form and structure of organs, he has traced the route that should be followed, and which since has successfully been done.

Moreover, he did not overlook the influence of the vital force or the organic reaction on the development, progress, and termination of diseases. He speaks of it more or less explicitly in several places; notably, when he recommends particular attention to be paid to the crises and critical days.

Thus, then, as I announced at the commencement of this chapter, we find in the book on Ancient Medicine, precious researches on the origin and progress of the Art; a reasonable development of the experimental method already advised by Hippocrates; the largest pathogenetic system which had yet appeared—a system, in short, which may be summed up as follows: the causes of diseases must be sought in every agent that affects our constitution beyond certain limits, whether coming from without or residing within us.

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### § VII. Resume of the Hippocratic Theories.

The first of these theories, that of coction and crisis, is founded on the capital observation that there exists in the organized body an intrinsic force, diffused in all its parts, creating a mutual sympathy, and harmonizing their various functions for a common end, by a kind of instinct. One of the most distinct characters of this force is its intermittence in regard to some of these functions, which is never seen in brute forces. These intermissions, which are seen in certain diseases,

produce in them periods, more or less regular, named critical periods or crises. But there are also many diseases in which these periods do not occur, or are not appreciable; and the fault of the ancient Hippocratists consisted in extending the theory of crisis to all pathology.

Force, or vital forces, would appear to be inherent to the organs, being dependent entirely or in part on the constitution of these; it was then essential to study that constitution; but the Asclepiadæ were prevented from proceeding to that study, by cotemporaneous prejudices.

On the other hand, the vital or organic forces act upon the substances, liquid, solid, or gaseous, whether existing in the body or coming from without. These substances, endowed with properties more or less energetic, modify the functions of the organs, which made it necessary for the physician to be acquainted with their properties. Now, as physics and chemistry, which alone can furnish this knowledge, were too incomplete to afford the ancient physiologists but vague or false notions, the medical theories varied much in this respect.

The greater part of the naturalists of antiquity, recognised four primary forms of matter, and pretended to derive from them all the physical properties of the body. In like manner, the majority of the physicians supposed four cardinal humors, on which depended all the physiological and pathological phenomena.

Again, a small number of naturalists recognised but two, or even one element; and also, following their example, a few physicians would only admit two physiological elements, and again, others only one.

In the midst of this conflict, a few men, more attentive, and less prejudiced, made the observation, that there is no proof that all material substances proceed from one or two, or four elements only, and that no one has ever seen the combination of a given dose of heat, cold, dryness, and humidity, engender either bitter, acid, sweet, or any other pretended secondary quality. They concluded that this division of the physical properties of bodies into primitive and secondary, was false, or at least hypothetical, and were desirous that only dogmas, which are experimentally demonstrated, should be admitted into the science. This was calculated to provoke a theoretic reform, for which the age was not yet prepared. We shall see its advent in the next period.

### The Medical School of Cos, after Hippocrates.

The eclat that Hippocrates had given to the teaching of the Asclepiadæ of Cos, survived him: many members of his family followed in his footsteps, and sustained the honor of his school. Among others, may be mentioned Thessalins and Draco, his sons, and Polybius, his

son-in-law, to whom are attributed some of the writings that form a part of the Hippocratic collection.

Not long after them, Diocles of Carystus flourished in the same schools, who was surnamed by the Athenians, the second Hippocrates, and Praxagoras, of Cos, the last of the Asclepiadæ, of whom mention is made in the history of medicine. Both composed several works that are entirely lost. Praxagoras, who is supposed to have belonged to the family of Hippocrates, was distinguished principally for his anatomical knowledge. He supposed, like Aristotle, that the veins originated at the heart. He did not confound these vessels with the arteries, as many of his predecessors, and Hippocrates himself, had done. He supposed they only contained air, or the vital spirit. It is thought that he dissected the human body.

Praxagoras was the first to remark the close connection between the changes in the pulse, and the dynamic state of the economy. He was also the first who attempted to give an explanation of that singular phenomenon, and thus laid the foundation of sphygmology, for before him, medical men had not given this much attention. The Hippocratic works rarely allude to the arterial pulsations, among the symptoms of diseases, and when spoken of, only a secondary importance is attached to them. But, ultimately, the observations of Praxagoras became a fruitful source of indications; this order of signs was even greatly exaggerated, as always happens in great discoveries, and efforts were made to build on this unique foundation, an entirely new system of semeiology.

The reigning theory in the school at Cos, as we have before said, was that which made the health depend on the exact proportion of the elements of the body, and on the perfect combination of the cardinal humors—the blood, bile, phlegm, and atrabile. This theory was generally attributed to Hippocrates. According to it, all diseases proceed from one of the four elements, heat, cold, dryness, or moist, the excess of which engendered some humor badly concocted, or too abundant, which, by extravasation from its natural reservoirs, passes into parts not habituated to its presence. The equilibrium is established by the coction and evacuation of the piccant humor. This doctrine, which was taught almost exclusively, until the foundation of the school at Alexandria, constituted the ancient Dogmatism, so named, doubtless, because it embraces the most anciently professed dogmas in medicine.

Amongst the most famous sectators of the Hippocratic Dogmatism, we shall name two philosophers, Plato and Aristotle, whose opinions have exercised a great influence on the march of the human mind in general, and particularly in respect to medicine.

ART. I. PLATO.

The first of these philosophers was endowed with a lively and brilliant imagination, and clothed with the charms of a seducing language, the purest morals in paganism. In lending to the grave teachings of Socrates, the graces and liveliness of his spirit, Plato secured for them immense popularity, and an eternal duration, which they would not, perhaps, have obtained without these foreign ornaments. But we have not to consider here, either the profound moralist or elegant writer, worthy of the surname of the Swan of the Academy; we can only occupy ourselves with Plato in his character of physician, and especially in that of physiologist.

Let us see, in the first place, what mode of acquisition he employed in the study of the physical sciences. We shall let him speak for himself. "Very well," he says, in the Phædon, "is anything more rational than to think by the thoughts alone, disengaged from all foreign or sensible agency; to apply at once the pure essence of thought in itself, to the research of the pure essence of each thing in itself, without the ministry of the eyes and ears, without, in short, any intervention of the body, whose slightest influence only troubles the soul, and prevents it finding wisdom and truth. If we are ever to attain the knowledge of the essence of things, must it not be in this manner?" *

It is clear, from what we have just quoted, that Plato undertook the study of the physical diseases, not by method of observation and experiment, but by that of pure meditation—by mental intuition. The following passage proves that he applied that method, not only to metaphysics and morals, but also to physics and physiology: "During my youth," he continues, "I had an intense desire to learn that science which is termed physics. I felt that it would be sublime to know the cause of each thing; what created, destroyed, and sustained it in existence. I was tormented, in a thousand ways, by my efforts to learn whether it is the cold and hot elements in a state of corruption, as some pretend, which form animated beings; if it is the blood, or air, or fire that causes us to think, or whether it is either of these, or the brain alone, that produces in us all our sensations, sight, hearing, and smell, which, in their turn, produce memory and imagination; which, by reflection create science. I reflected, also, on the decomposition of all these things, of the changes which take place in the heavens and the earth, and at last would find myself confused and wholly disqualified for such researches." †

* Œuvres complètes de Platon, translated by M. Cousin, page 203.

† Ibid., p. 273.

The meditations of our philosopher having resulted in no positive knowledge touching the questions that he was anxious to understand, he did not deduce therefrom the very natural consequence, that it was possible that he might have followed a false course, and that the method which conducts most certainly to the discovery of abstract truths, such as the axioms of metaphysics, and morals, was not as sure to attain the knowledge of material things, of the truth of observation.* Plato never suspected the excellence of his method, and he was never tempted to try any other; thus despairing, he returns to the origin of things, to explain in what their essence consists, when, having heard read in a book of Anaxagoras, the following proposition: *mind is the regulator and principle of all things*—"this idea," he says, "struck me like a stream of light."

Nothing more was necessary to inflame the imagination of the philosopher of the Academy, and create in his brain an entirely new system of physics. See how he reasons: "Since the intelligence is the first cause of all things, it must have ordered all things for the best possible end; then, if any one desires to find the cause of everything, how it originates, perishes, or exists, he has only to ascertain to what end such thing is destined. Therefore," he adds, "I comprehend no longer, all the other learned causes that are offered us, but if any one comes to tell me what it is that makes a thing beautiful, or gives it liveliness of colors, or forms, or other similar things, I leave aside all these reasons, which only perplex me, and I assume, myself, without plan or art, and probably too simply, that nothing gives beauty but the presence or communication of the original beauty, in whatever way this coummunication may take place on this subject. I affirm nothing, except *that all things beautiful are beautiful by the presence of beauty.*"†

The reason which Plato has given for the beauty of things, naturally recalls that famous response of the schools of the Middle Ages, to the question, Why does opium produce sleep? *Because it possesses the sleepy principle.* But the passage we have just quoted, merits the attention of the reader for more serious reasons; for it shows how and why the consideration of *final causes* was introduced into the natural sciences; a consideration that has played an important part in more than one system of physics and physiology—one of the most unfortunate results of

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* This is not the place to examine if the same mode of acquisition is applicable to all branches of human knowledge, as many ancient and modern philosophers have thought. This important question will become more proper in another chapter, where we shall treat it with all the consideration it merits.

† Œuvres Complètes de Platon, page 283.

which has been to divert the human mind from the path of observation and experiment, and lull it into a species of quietism, extremely contrary to the progress of light.

But without anticipating the results that the Platonic method was destined to produce—results which we shall hereafter see develope themselves—let us be content, for the moment, with examining the benefit that Plato himself realised from it, in regard to the explanation of natural phenomena. As all parts of his philosophy are intimately connected, as is the case in that of Pythagoras, I shall be compelled to say something of his cosmogony before exposing his physio-pathologic ideas: and if I am not always able to shed upon these abstract matters the clearness I would desire, I pray the reader to remember that the subtle Aristotle himself, the assiduous auditor of Plato, sometimes found the conceptions of his master too difficult to follow. It is in the dialogue entitled Timæus, that the founder of the Academic sect has deposited the products of his meditations touching the nature of created beings in general, and of man in particular; and it is from it that we extract the following summary.

Plato, like Pythagoras, maintained the idea, that God and matter existed from all eternity; but that matter in itself had no form, property, or force. God gave it, from the beginning, a triangular form; afterward, taking a certain number of primitive triangles, he composed the four primary elements, which we, in this lower world, term fire, air, earth, and water. Fire, which is the most subtle, is made up of the smallest number of triangles; it has the figure of a pyramid. The air represents a solid of twelve faces, a dodecahedron. Water has the form of an icosahedron, or a solid of twenty faces. Finally, the earth, the heaviest of all the elements, constitutes a hexahedron, that is to say, a perfect cube, composed of right-angled triangles.

Thus, Plato, having borrowed from the philosopher of Samos the dogma of the homogenity of matter, went yet farther than he in the field of hypothesis, for he attempts even to determine the primitive figure that the Creator must have given to atmospheric matter. He pretends that this figure is a triangle, because, of all the surfaces, the triangular is the most simple, and there is no geometrical figure which may not be divided into triangles.

While matter remains in its elementary state, it does not affect our senses in any way. For matter to become perceptible, it is necessary that several elements unite, and form an aggregate. Thus all the material substances which we know, and to which we assign particular names, result from the assemblage of various elements. Water, for example, which we see, feel, and employ in so many various ways, is not elementary

water. The liquid body which we call water is, according to Plato, a compound, in which the aqueous element enters in a much larger proportion than the other elements.

This philosopher also admits, with Pythagoras, the existence of different orders of created spirits. He says, that the Supreme Intelligence charged the secondary gods with the formation of mortal animals. These gods, having received from the hands of the Celestial Father the immaterial principle of the human soul, fashioned a body for it with the most regular and polished of the primitive triangles. This luminous and incorruptible body, which envelopes the immaterial soul, was placed in the brain of man. The gods endowed, also, the visible and grosser body of the animal with another, mortal soul, the seat of the violent and fatal passions. This occupied the length of the spinal marrow, leaving between it and the divine soul, the interval of the neck, for fear that the two substances, of a nature so different, being too closely connected, the least pure might tarnish or embarrass the other by its contact.

"Therefore," says the same author, "the gods placed the mortal soul in the chest and the trunk; and as this soul contains a good and bad principle, they divided the cavity of the trunk into two departments, just as is done with the apartments of males from females, by means of the diaphragm, placed in the middle as a partition. Nearer the head, between the diaphragm and the neck, they placed the manly and courageous, or bellicose principle of the soul; so that being submitted to, and in concert with the reason, it may restrain the revolts of the passions and desires, when these are unwilling to be controlled by the influences which reason sends down from its citadel.

"That portion of the soul which requires food and drink, and all that the nature of our body renders necessary, is located between the diaphragm and the umbilicus. The gods have extended it over this entire region, like a rack, where the body may find its food. They have confined it there, like a ferocious beast, which it is necessary, nevertheless to feed, so that the mortal race may subsist.

"The authors of the human species having foreseen that we would be intemperate in eating and drinking, and that by gormandizing we should exceed very much the limits of what is proper and necessary; therefore, in order to prevent us from destroying ourselves at once by diseases, and for fear that the race would thus soon become extinct, they arranged what is termed the lower bowels, to serve as a receptacle for the superfluous food and drinks, and they surrounded it with the folds of our intestines, for fear that the aliment, by passing too rapidly through the body, would create, too soon, the necessity for its renewal,

which in making us insatiable gourmands would divert us from the cultivation of philosophy, and the muses, and from the obedience we owe to that which is Divine, within us."

Plato enumerates this way the principal parts of the body, and supposes that he had sufficiently explained the manner in which each one was generated, when he announced its functioms; or, to use his own expression, when he enumerated their final causes. But I think I have shown enough to convince the reader of the emptiness and nothingness of this kind of explanations, in the physical sciences.

As to the physiology of the same author, it is extremely succinct, and limited to some generalities. It emits no new idea, no principle, which has not been explicitly developed in the Hippocratic works, with the exception of the idea of elementary triangles, that Plato found means to bring in everywhere. "The nature of diseases," he says, "has something in common with that of animals. They are developed within a limited period, the same as each species; each animal is born to live for a certain determined period, barring the accidents that may occur; for the triangles which constitute each animal are disposed to last for a certain length of time, beyond which the animal can not survive. It is the same with diseases; but if they are disturbed before a fixed time, by the employment of remedies, the smallest grow larger, and a single one attracts many. It is better to treat them by regimen, as far as possible, and not disturb them by medicines. Let this suffice for the animal and his corporeal part."

In bringing out some of the physico-psychical naivetés of Plato, I am far from desiring to cast ridicule on the conceptions, sometimes bold, but always brilliant, of one of the most splendid geniuses of antiquity. I am aware that seen in the lights of his age, the fictions of this philosopher are not as eccentric as they appear to us at first sight, since they have been reproduced in many writings, in totality or in part, almost as far down as our times; but I wish to show by a great example, in the first place, that the introduction of final causes into Physics and Medicine, has only been a source of deceptions; next, that the purely speculative method, so exact and fruitful in mathematics, has only led to futile dreams, and the play of the imagination, the sublimest minds that have attempted, by this method, to seek the properties of matter, and the explanation of the phenomena of nature. This will be more and more apparent, as we advance in this history, and new examples, not less illustrious than the preceding, will come to confirm this. I will deduce, for the present, two practical results: first, that it requires above all things, to choose a good method by which to acquire and cultivate the sciences; second, that every system of physics, or of medicine,

which does not repose on accessible facts, or the immediate appreciation of the senses, is, at least, very hazardous, for where the senses can not penetrate, imagination reigns as sovereign.

Philosophers point out two principal modes of acquisition: the one, which they name logical, or rational, consists in establishing, at the commencement, some general propositions, or abstract principles, whence they deduce, by reasoning, the solution of all particular causes: thus, in mathematics is deduced from the axiom, "two quantities equal to a third, are equal to each other," the solution of a multitude of problems. So, also, from the following moral principle, "do unto others, as you would have them do unto you," the casuist deduces a mass of special precepts. Plato, who knew no other method, is then, very excusable for having pretended to derive an entire system of cosmology and physiology, from that antique dogma: the *Supreme Intelligence has ordered every thing for the best possible ends.*"

The other mode of acquisition, called the empirical, or experimental, consists in observing, first, a great number of particular cases or phenomena, comparing them with each other, and noting their similitudes and differences; finally, to express what they have in common, by general or abstract propositions, which constitute axioms. In this way, Hippocrates, having seen, time and again, patients who had many parts of their body affected, yet complained of one only, deduced from his observations, the following aphorism: "in two simultaneous pains, the more intense obscures the other;" and so the natural philosophers, having observed that water rises in the body of a pump, in proportion as the piston is withdrawn, a little too hastily concluded that nature abhors a vacuum.

The first method, it is seen, proceeds from generals to particulars, from the abstract to the concrete, from the axiom to the phenomenon; the second, on the contrary, advances from particulars to generals, from the concrete to the abstract, from the phenomenon to the axiom. Both methods have their advantages, their inconveniences, and their proper uses. Far from being opposed to each other, as has been pretended, these two methods fortify and enlighten each other, and the truth never takes hold of us in a more irresistible manner, than when it is attained by both routes at once. Certain ideologues have erroneously called the first method, the synthetic, and second, the analytic: the words synthesis and analysis, employed in this acceptation, make nonsense, as has been well remarked by a modern metaphysician, and as I shall demonstrate hereafter myself.*

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* See end of the volume—the doctrine of Barthez on the Vital Principle.

### ART. II. ARISTOTLE.

Aristotle was born at Stagyrus, a city in Macedonia. Having lost his father at an early age, he was, though a mere youth, abandoned to himself, and expended his patrimony in dissipation. At first he followed the career of arms, but soon becoming disgusted with this profession, he left it to resume the favorite studies of his early youth — philosophy and medicine.

The teachings of Plato at that time shed a splendid influence over Greece. Young men flocked to Athens, from all parts, to hear him. Aristotle went also, and showed himself one of his most assiduous and constant auditors. His ardor in study was incredible; he consecrated to it entire days, and a great part of the nights. It is said that he was obliged, for a living, to take a place in the shop an herbalist, and doubtless he gave medical advice, also, according to the habit of the pharmacopolists of those times. Thus, the philosopher of Stagyrus, the future chief of the Peripatecian sect, belongs to the history of Medicine in several respects, namely, by his birth, and early education: for he was the son of a physician, and received from his father the first elements of science; secondly, by the profession he practiced during many years of his life; thirdly, by researches in comparative anatomy and physiology; finally, by his philosophic doctrine, which maintained its empire for so long a time, over every branch of human knowledge.

When Philip, king of Macedonia, whose finesse and political discernment became proverbial, wishing to give a preceptor to his son Alexander, then fourteen years of age, fixed his choice on Aristotle, and wrote to him on that occasion that well known letter, which not less honors the monarch than the philosopher, we all know how well the young prince responded to the hopes of the father, and the lessons of the master. I shall say nothing here of the invincible hero who overran and conquered Asia; but I must not be entirely silent in regard to him, as an impassioned amateur of science and letters, who, in the midst of the embarrassments of the vastest government of the world, and unceasing wars, maintained with his preceptor a scientific correspondence, and not only furnished him the necessary funds to form the first known museum in natural history, but also occupied himself in the collection of animals, plants, and every sort of rare objects, which he transmitted to him from the depths of Asia.

Thanks to the munificence of his royal pupil, Aristotle was in a condition to gather an immense collection of the products of nature — a fruitful mine whence his genius drew an incredible mass of observations, that antiquity never surpassed, in many particulars, and which has

been the astonishment of all ages. Certain critics, not being able to explain how a single man was able to treat so great a number of subjects, and shed so much light on the greater part, have suspected Aristotle of having wickedly destroyed the writings of his predecessors, so as to appropriate their discoveries to himself, just as they accused Hippocrates of having set fire to the temple of Cos, with the design of destroying the archives whence he had drawn the materials of his works — pure calumnies, which fall before the slightest examination, and of which all history has made itself the eternal echo. Every one should read, in the introduction to the Hippocratic works of M. Littré, the natural explanation that this learned philologer gives of the loss of a multitude of ancient works, without resorting to hazardous conjectures against the best established reputations. But the founder of the Peripatecian sect, so far from leaving unmentioned the names of the authors who had written before him on the same subjects, quotes them on nearly every page — he often gives their opinions, and many of them are indebted entirely to his quotations for the advantage of having escaped entire oblivion.

The earliest philosophers who meditated on the origin of our knowledge, or the manner in which we acquire it, and the degree of certainty which it offers, were greatly shocked at the frequent and gross errors into which we are drawn by the senses, while they were agreeably surprised, and marvelled at the character of infallibility that certain abstract truths presented, and particularly those that belong to mathematics. To give only one example of this contrast, but one which is everywhere known, do not the most remote astronomical observations demonstrate that the sun and the moon have, in reality, dimensions enormously greater than their objective appearance would lead us to suppose? From this example, and an infinity of similar ones, philosophers drew this general indication, that the senses transmit false, doubtful, or illusory impressions, and that the soul, to attain the possession of truth and certainty, must isolate itself as much as possible from the intervention of the body, and reflect within itself. Hence arose the contemplative philosophy that Pythagoras recommended in secret to his disciples, and which Plato taught publically, with all the prestige of his imagination and eloquence.

Nevertheless, men who devoted themselves to the study of physical phenomena, physicians, above all others, could not question the necessity of the intervention of the senses, to obtain a faithful image of these phenomena. Daily experience demonstrated to them how vain are the anticipated conceptions of the mind touching the operations of nature. Each day new deceptions came to lead them to mistrust the principles

established *a priori;* for these principles conducted them to consequences that the facts frequently contradicted. Thus, we have found in the Hippocratic collection, authors who proclaim the necessity of banishing from medicine all hypothesis, and holding to immediate observation only; authors who say that there is no fixed principle of treatment; that the cure of diseases is effected sometimes by contraries, sometimes by similars, and sometimes in other ways, without our being able to say in virtue of what principles.* These are, evidently, empirical maxims, but mere isolated ones, simple perceptions, which constitute neither a system nor a method.

It was reserved for the greatest naturalist of antiquity to lay the first philosophic basis of empiricism; Aristotle, in emitting his famous axiom, "all ideas come from the senses," (*nihil est in intellectu quod non prius fuerit in sensu,*) introduced into science a new principle, in manifest contradiction to the revered dogmas of Pythagoras and Plato. It is, then, very important to know how the chief of the Peripatecians would justify, from the beginning, the bold principles which became, two thousand years later, the germ of a scientific revolution.†

We read, in the treatise on Analysis, "It appears that all animals have received, from nature, the faculty of sensation and judgment; but after a sensation has been produced, some preserve the remembrance of it, and others do not. Those who retain no reminiscence of the impressions, have no idea of the things, beyond immediate sensations. Those, on the contrary, whose soul retains some trace of passed sensations, can, at the end of a great number of such, reason from the recollection which they keep of them. In this way, the memory comes from the faculty of feeling. The remembrance of a thing often repeated creates experience, and experience, that is to say, every general notion which becomes fixed in the soul, relative to the common properties of certain things, abstraction made from their differences—this notion, I say, is the principle of science and art."‡

In another work, the philosopher of Stagyrus recalls the distinction that he has just established between animals which have memory, and

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*Traité des Lieux dans l'Homme. Traité de l'Ancienne Médecine.

†This principle was not entirely new, since Plato makes allusion to it in the passages we have cited, when he asks himself if it is not the brain that produces all our sensations, "which produce, in their turn, the imagination and memory, whose operations at last develop science." But Plato scarcely deigned to pause and consider the opinion, while Aristotle adopted and developed it.

‡Aristotelis Opera Omnia quæ extant Græcé et Latiné. Authorè Guillemo Duval. Lutitiæ Parisiorum, anno M. DC.XIX. Analyticorum posteriorum, lib. II, cap. XIX.

those which have not; he adds, that the first are susceptible of education, while the others possess instinct only. Finally, he says that man alone is capable of instruction and reason; after which he continues in these terms: "To deduce, from a great number of experiments, a universal idea on an entire class of similar objects, this constitutes art. Thus, to possess the knowledge that a remedy has been useful in a certain disease, in the hands of Callias, Socrates, and several others, is experience; but to know that such a remedy is good for all individuals of the same species, attacked by a given affection, for example, for all men who are tormented with phlegm, bile, or a hot fever, this is what constitutes art."*

Might not we believe, in reading these fragments, that they are extracted from some chapter of the modern school of sensualists? How then does it come that Condillac, one of the coryphæ of this school, could write the following lines: "Long ago it was said that all our knowledge originated in the senses. Nevertheless, the Peripatecians were so far from knowing this truth, that notwithstanding the minds of several had appreciated, they were unable to develop it; so that for several ages afterward it was still a discovery to be made. I am ignorant of the motive of Aristotle, when he advanced his doctrine on the origin of human knowledge; but I do know that he has left no work in which this doctrine is developed, and that, besides, he sought to be in everything the opposite of the opinions of Plato." †

The best excuse that can be given for the epigrammatic insinuation of this last phrase of Condillac is, that he had never read, or had completely forgotten the passages of Aristotle that I have quoted above. There are yet other discoveries, claimed by moderns, the germs of which are found in the writings of this prince of ancient philosophers. The philosophic doubt, for example, which forms one of the pillars of the method of Descartes, is clearly indicated by Aristotle, when he says, "Men who desire to learn, must previously know how to doubt; for science is only the resolution of previous doubts; but he who does not know the knot is unable to untie it." ‡ The doubt that Aristotle has recommended is very different, as is plain, from that which the Pyrrhornian or Zetetique sect professed. The latter regarded doubting as the highest degree of science; the Peripatecian, on the contrary, saw only in it, the first step toward the light—a simple disposition of the soul to elevate itself to the intelligence and demonstration of the truth.

*Opera Omnia, Metaphys., lib. I. cap. I.

† Œuvres complètes de Condillac—analytical extract from the Traitè des Sensations. Paris, 1798.

‡ Metaphys., liv. III., chap. I.

Having thus established clearly the claims of Aristotle, as the founder of the sensualist or experimental doctrine, it remains to show in what particular he afterward separated himself from the doctrine, and established a method diametrically opposite to that of modern sensualists. To show this I will recall the second axiom emitted by this philosopher, on the development of ideas. "The first ideas," he says, "that the sensations create in our minds, are general ones." Here, we observe, the ancient school of the sensualists is entirely separated from the modern, and here, also, commences their antagonism. It is, then, essential to examine upon what considerations Aristotle rests, in advancing such a maxim. He involves in the support of this proposition, the case of a man, who, perceiving at a great distance an opaque mass of vague or undetermined forms, conceives, at first, the general idea of some kind of a body. Then, as he approaches this mass, and sees it moving automatically, he conceives the idea of an animal; then, finally, when he is near enough, he will not only recognize of what species this animal is, but, also, if he gives attention to certain marks, and particular qualities, he will be able to distinguish it from every other individual of the same species; in this way he obtains his individual ideas. It is thus, according to this philosopher, that the human mind advances from the most general notions, to those that are particular and individual. He also cites the example of a little child, who calls all men *papa*, and all women *mamma*; but as he grows, his ideas become special, and he learns to discern his father and mother from all other persons.*

The argument of Aristotle is captious, and may deceive more than one reader. It will not, then, be out of place, I think, to recall here the manner in which Locke, one of the chiefs of the modern school of sensualists, explains the succession of our ideas, and the progress of our knowledge. "The ideas," says this writer, "which children form of persons with whom they are familiar, are similar to the persons themselves, and are only special ones. The ideas they have of their nurses and mothers, are very well defined in their minds, and, as so many faithful pictures, represent to them only those individuals. The names that they give them, at first, are limited to them; thus the names of nurse or mamma, which children employ, are connected entirely to these persons. But after they acquire a greater knowledge of things, and observe that there are several other beings, who, in respect to figure, and other particulars, resemble their fathers, mothers, and other persons that they are accustomed to see, they form an idea which includes, also, these

* Aristotle, On Analysis, 2e partie, chap. II and XIX. Natural Principles, liv. I, chap. I; and in several other books.

particular beings, and they call them with all others, men. In this way he obtains a general name, and a general idea. In doing so, however, they form nothing new, but separating themselves from the complex idea they had of Peter, of James, Mary, and Elizabeth, and which was particular to each of them, they retain what is common to them all." *

The last two quotations, one taken from the writings of Aristotle, the other from those of Locke, offer us the curious spectacle of two metaphysicians, who, starting with the same principle, that *all ideas are derived from the senses*, separated immediately, to follow opposite routes: the one pretending that the first ideas formed in our minds, by the intervention of the senses, are general ones; the other affirming that they are always individual in their character. But it is easy to see, that Aristotle, in the sample that he gives, confounds obscure, vague, and undetermined ideas with general ideas, which is a grave mistake, and scarcely conceivable on the part of such a logician as he. Thus, when I say, that the whole is greater than any one of its parts, I express a general idea very clearly; instead of that, if I perceive an object very distant, not being able to distinguish its form, I have only an individual idea, and that vague and confused. This divergence, so slight in appearance, and nearly imperceptible at first sight, nevertheless, misled in a very unfortunate manner, the philosopher of Stagyrus, and plunged him into an inextricable labirynth of sterile subtilties. Let us follow him for a few moments, in this mistaken route, and see where he ends, relative to the physical and medical sciences.

From the moment our philosopher believed he had proved incontestibly, that general ideas are the first that are formed in the human understanding, he deduced from it the conclusion, that the study of all the sciences must commence in generalities, or axioms, which he named on that account, principles or elements, and then must pass to particular or individual notions—to the phenomena. So, after having assigned to our ideas an origin, entirely different from Plato, he proceeds to advise the same didactic method, the same mode of acquisition that he does. Applying this erroneous method to the study of physics, Aristotle commences by asking how many principles there are in nature. He exhibits all the opinions emitted before him on this thorny subject, and after having discussed them, one by one, he ends with the following conclusion, which I translate literally: "Every body knows that the principles or elements exist in antagonism, and it is perfectly reasonable; for principles can not produce each other, nor be produced by any thing; every thing, on

* Locke's Essay on the Human Understanding, book III, chap. III, § 7. See also Condillac, Essai sur l'Origine de nos Connaissance, sec. 5.

the contrary, proceeds from them. Thus, we have exhibited what forms the essence of first oppositions—on the one hand, they proceed from nothing, being original; on the other, they do not mutually produce each other, because they are antagonistic.*

Immediately after, he proves, by an argumentation of the same force that natural principles are in number, two or three, namely, the opposition of heat and cold, of dryness and moisture, and finally, the base, or the subject on which these two primitive oppositions must exercise their energy, to which he gives, in another place, the name of ether.

Aristotle admits, moreover, four elements, fire, air, earth, and water, which he believes susceptible of mutual transmutation, and whose laws he describes. Above them, in the most elevated zone of the heavens, floats a fifth element, so called, because it moves rapidly, and eternally in a circle. This was the first and most divine of all the elements, the only one which is imponderable, and immutable; the only one which was original in its character, being the offspring of none, and yet the basis of all."†

We have seen that Plato endeavored to explain all the phenomena of nature, by the consideration of final causes only; but Aristotle, who piqued himself on being more exact, assigned to each phenomenon, four causes, namely, the material, formal, efficient, and final. Thus, the clay which the potter uses to fabricate a vase, is the material cause of that vase; the model, or mould after which he forms it, the formal cause; the potter himself the efficient cause; and lastly, the purpose for which it is destined, the final cause.‡

If some of my readers find these details on the Peripatecian philosophy a little too technical—if they do not comprehend what utility the remembrance of these subtile and superannuated distinctions can have for medical men of our times, I pray them to consider that the greater part of the writings of the ancient and middle ages are more or less imbued with them; so that it would be impossible to read those writings, and particularly the history of medicine, without having at least a superficial notion of the doctrine of Aristotle; for the medical theory of Galen, which has reigned in the schools down to our own era, is a patent deduction from it. With this short digression, I pass to consider matters which have a connection, more or less direct, with medicine.

Faithful to his method of commencing by principles, Aristotle

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* Œuvres d'Aristotle, Des Principes Naturel, liv. I, chap. VI.

† Aristotle, Traité du ciel, liv. I, chap. II, III, liv. IV, chap. V; also in Traité de la Generation, et de la Corruption, liv. II, chap. IV.; also on Traité des Méteores, liv. I, chap. III.

‡ Aristotle. Des Principes Naturel, liv. 11, chap. III., et suiv.

approaches physiology in the most obscure manner. He inquires, in the first place: What is the nature of the soul—what are its faculties and functions? To his view, the soul constitutes the essence of all living bodies, vegetable and animal. It is simple, indivisible, and resides in whole in each part of the organized being, as one may assure himself, he says, by dividing a plant, and even certain animals, called insects: for after the division, the separate parts continue to have the same life as the whole structure, which proves that each of them contains the soul integrally.*

The soul is endowed with four primitive faculties, viz: the nutritive, or vegetative, the sensitive, motive, and intellectual. The first three reside equally in all parts of the body, and they are inseparable. The last one—that is to say, the intellectual or contemplative—being of a different species, must have, says our physiologist, a distinct and particular seat. Aristotle does not say positively where its locality is, but we may infer, from various passages in his writings, that he regarded the heart as the special residence of the intelligent soul.†

The vegetative faculty presides over nutrition and reproduction. It is indispensable to all things that are born, live, and die, and is common to plants and animals. The sensitive faculty, on the contrary, exists only in the latter, of whom it constitutes the essence. Vegetables are deprived of it, because they are formed of only homogeneous parts; that is to say, they originate from one element alone, whilst animals are formed of organic parts, i. e., are composed of various elements. Among animals, there are some which have the faculty of locomotion; others are deprived of this; and lastly, according to him, a very small number of the animal species appear to be endowed with intelligence and reason.‡

This physiologist had no distinct notion of the locomotive apparatus; moreover, he confounded the tendons and ligaments with the nerves, as we shall show presently, and he designated the muscles by the term flesh.§

He places the principle of the motive faculty in the centre of the body, for the reason that, in every object that moves, it is necessary that there be a fixed and immovable point which shall serve to sustain all the other parts, and give them impulse.‖

See how the desire to give a reason for every thing may lead minds of the keenest perception to offer words void of sense, for veracious and

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* Traite de l'ame, livre I, ch. IX.

† Sprengle. History of Medicine.

‡ Aristotle. On the Soul.

‖ Du movement des Animaux.

§ De la Locomotion. Histoire des Animaux.

grave explanation! We have already seen examples of this, and we shall see many more in the course of this history. In place of observing carefully the natural phenomena, and describing them with the greatest possible exactness, man always seems to prefer to carry his judgment beyond sensations; and this is the source of the greatest errors in the domain of physics. Aristotle regards heat and humidity as the two conditions indispensable to life; the duration of which, according to him, is generally proportionate to the volume of the fluids. It is on this account, he adds, that large animals live longer than small ones. That rule, however, is subject to many exceptions, of which the author himself cites examples; but he is not embarrassed to explain them.*

He had no idea of the true functions of the brain, though he describes that viscus much more minutely than any of his predecessors. The following are his remarks: "That which is first found in opening the head, is the brain, and it is placed in the anterior part. All animals possessing a brain, that is to say, all those which have blood, as well as those of the order of molusca, have it generally placed in the same position; but the brain of man is much more considerable than that of other animals, proportionably to the size of his body, and is also the most humid. The brain is enveloped in two membranes; that nearest to the cranium is the strongest—the other, which rests immediately upon it, is weaker. The brain is always composed of two lobes, independently of the cerebellum, which lies beneath, and whose form and structure differ from that of the brain. There is usually a little cavity in the middle of the mass of the brain; its substance is naturally cold to the touch, and neither veins nor blood are ever found in its interior; but the membrane which envelopes it is full of veins.†

There is nothing in all this which refers to the elevated functions of the encephalic organ. Aristotle did not even suspect them; for he places, as we have just seen, the seat of the soul and of sensation in the heart.

Nor did he know better the functions of the nervous system, whatever Sprengle, the historian, may say, who attributes to him very gratuitously, in my opinion, the discovery of that apparatus.‡

Let every one judge by the following extract: "Let us speak now of the nerves," says the Greek naturalist; "they proceed also from the heart,

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* De la longueur et de la brieveté de la vie, chap. v. De la jeunesse et de la vieillesse, de la vie et de la mort, chap. iv.

† Histoire des Animaux, trud. by Camus, Paris, 1783.

‡ Sprengle, Histoire de la Médicine, translated into French by Jourdan. Paris, 1815, T. I, p. 384.

that viscus containing nerves in its structure—in its largest cavities; and what is termed the aorta is a nervous vein, whose extremities are nothing else than nerves. At the points where these extremities terminate around the joints of bones, they are not hollow, and are susceptible of the same tension as the actual nerves. But the difference between the nerves and the veins is, that the nerves do not proceed without interruption, from one unique substance to all parts of the body, like the veins. The nerves, on the contrary, are distributed on all sides, and to the articulations of the bones. If they proceeded from the same trunk, their continuity would be apparent in emaciated animals."

"The principal nerves are those of the ham, on which depend the power of leaping; then another double nerve, called the tendon; then the extensor and the nerve of the shoulder, which contribute to the strength of the body. No particular name is given to the nerves which belong to the articulations, because all articulations of the bones are bound together by the nerves. In general, the nerves are found in great abundance around the bones, except the bones of the head, which are united by sutures." *

It is evident that in this entire description, Aristotle describes, under the name of nerves, only tendons and ligaments. But Sprengle formed his opinion on the following paragraph: "In the space between the eyes we find three canals which go to the brain; the largest, the middle one, proceeds to the cerebellum; and the smallest, the one which is nearest the nose, leads to the brain."†

He infers from this phrase, that very probably Aristotle had observed the optic and olfactory nerves in fish, where they follow this direction. Whether or not this naturalist has observed a few nerves, it is nevertheless certain that he did not at all infer their functions.

Aristotle is rich enough in his own merits, without needing to be adorned with the plumes of others. No man in antiquity studied and searched out more things than he, and no one introduced into science so many new facts. To keep to our subject, we assert that, though he never dissected human corpses, he nevertheless corrects many errors on the anatomy and physiology of man, in the Hippocratic collection. For example, he refutes the opinion of Polybius, who supposed that the veins commence at the occiput, from which they descend in pairs the length of the anterior, lateral, and posterior surfaces of the body; he asserts that they originate at the head. He combated also the opinion

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* Aristotle, History of Animals, livre III, chap. v.

† Sprengle, History of Medicine, t. I, p. 38. Aristotle, History of Animals, livre I, chap. XVI.

that a part of the fluids drank went directly to the lungs, for the purpose of cooling them.*

As he had dissected a considerable number of animals of every species, he compares, with a sagacity astonishing for his era, the organic apparatus by means of which each of them lives, propagates, and fulfills the various functions to which it is destined. In speaking of the heart, for instance, he signalized the varieties of form and structure that this organ presents amongst quadrupeds, birds, reptiles, fishes, etc. He does the same in regard to the digestive tube, the lungs, and the other organs successively. He does not group together, according to the method of naturalists, all the characters that appertain to the same species of animal, so as to distinguish each of them from all the others; yet his method is not less philosophic nor less fruitful in interesting ideas; he presents the history of each apparatus of each organic function successively, and shows the varieties and shades in the whole range of the animal scale. In a word, he created comparative anatomy and physiology; and the plan that he traced is so appropriate to the subject, that, twenty centuries later, George Cuvier did not choose another.

If the founder of the Peripatecian sect can be reproached for having propagated a taste for scholastic subtilties, it must be acknowledged also, that he has furnished an example of patient and attentive observation of nature. His history of animals is a treasure of curious details on the manners and habits of that class of beings, their modes of fecundation and incubation, and their diseases. His disciples, excited by his example and his counsels, cultivated with a praiseworthy zeal, anatomy, physiology and natural history. Theophrastus, his successor, was the most eminent botanist of antiquity. Their reputation in that class of studies, was so well established, that an ancient satirist makes Mercury say, in showing a Peripatecian, whom he wishes to sell, "behold a man who can tell you, in a moment, the duration of the life of a fly; to what depth the rays of the sun penetrate the sea; and what is the nature of the soul of an oyster; he will recount to you, a quantity of other things, more difficult still, on the semen, generation, and the manner in which the fetus is formed in the womb of the mother."†

Plato and Aristotle were among the ancients, the most eminent propagators of two antagonistic opinions, that have divided philosophers, from the origin of science. One of these opinions supposes all our knowledge to be derived from mental intuition, without the intervention

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* History of Animals.

† Luciani Opera—towards the end of the dialogue entitled, Vitarum Anctio; p. 108, edition of Bourdelat. Paris, 1605.

of the senses; the other claims that all our ideas are due to sensations. We shall see these two scientific methods, so to speak, parallelly increase, and become more perfect, without either obtaining any decided preëminence over its rival. Both count amongst moderns, partisans of the highest intelligence. It will suffice to name Descartes, Leibnitz, and Kant, for the spiritual school, and Bacon, Locke, Hume, and Condillac, for the sensualist school. We shall, in the course of this history, make it our duty to study, and compare, seriously, the opinions and methods professed by both of these schools, being well convinced that it would be neither just nor reasonable, to agree, exclusively, with the dogmas of either, before diligently examining the teachings of both; and if my confreres in medicine accuse me of separating myself from my subject, by according too much space to the examination of medical philosophic methods, I reply in this aphorism of the most learned interpreter of the doctrine of Cuvier: "the first question in all science, is always a question of method."

### RESUME OF THE PRIMITIVE PERIOD.

During the short period through which we have just passed, we have seen medical science, stripped of its mystic veil, take, suddenly, a rapid bound. The principal foundations of its edifice have been laid, and we see appear an outline of each of its parts, which is to form, at a later period, a vast structure—an outline whose totality offers already an imposing, although somewhat vague, aspect. "Antique science," as M. Littré most eloquently says, "has a great resemblance to modern science. From the epoch which we are forced to regard as the aurora of medicine —from the first memorials that we possess of it, the fundamental questions are debated, and the limits of the human mind are touched. But within these limits, science finds an immensity of inexaustible combinations, the materials for its growth."*

This remark is as true of philosophy, as of medicine. Plato and Aristotle indicate to us two sources whence flow all our natural knowledge; but do not both of them lead us into error, by proclaiming in an exclusive manner, as a mode of acquisition, the one mental intuition, the other exterior observation?

Hippocrates forms the transition period between the preceding periods and this; he belongs equally to mythology and history; for, if some circumstances of his life, and some of his works are authentic, the greater part are doubtful, or controverted. His doctrine was received by his cotemporaries, and by posterity, with a veneration which resem-

* Œuvres d'Hippocrate. Paris, 1839. Introduction, p. 567.

bles a worship, no less, probably, on account of the real merit of his doctrines, than by reason of the mystery which shrouds his birth. After him, no physician has ever obtained an homage so elevated, so constant, and so universal. Very soon, anarchy prevailed in the midst of the school which he had rendered celebrated; a crowd of methods and theories were surreptitiously propagated there, under the shadow of his name and authority; so much so, that as a result, it became impossible to discern, in the midst of so many writings and facts, placed to his account, what was really legitimate of all that was imputed to him.

Medical science, in changing its locality, proceeds also to change its aspect. After a few years of confusion, we shall see medical men divided into three great sects, which will struggle with each other during several ages, with balanced success, and end by uniting with, or becoming embosomed in the most powerful.

# IV. ANATOMICAL PERIOD.

COMPRISING THE PERIOD OF TIME WHICH EXTENDS FROM THE FOUNDATION OF THE ALEXANDRIAN LIBRARY, SOME THREE HUNDRED AND TWENTY YEARS BEFORE CHRIST, TO THE DEATH OF GALEN, IN THE YEAR TWO HUNDRED, OF THE CHRISTIAN ERA.

## GENERAL CONSIDERATIONS.

It was truly a royal idea, and worthy of the successors of Alexander, that of collecting together all the intellectual riches of the universe, and placing them at the disposal of studious men, who were desirous to use them for their improvement, and the advancement of science.

In order to conceive all the grandeur and munificence of such a creation, it is necessary to recall under what circumstance it was undertaken, It should be remembered, that manuscripts were then extremely rare, and consequently of an exorbitant price; that of the greater number of works there were but very few copies, and often one only, so that those who possessed, would not part with them easily, and scarcely allow copies even to be made. All the literary treasure of a family consisted often of one work only, and fewer families yet were in possession of such a heritage. Before the foundation of the libraries of Alexandria and Pergamos, there is no mention made of any considerable collections of books, except those of Pericles and Aristotle. In such a state of things, the inferior classes of society were deprived of all written instruction, and a poor man was able to acquire, except under very extraordinary circumstances, only a very limited degree of knowledge.

Under such circumstances, the establishment of a library, accessible to the public, was an act of philanthropy and liberality, above all eulogy. It was, at the same time, one of those happy creations that immortalize a reign—an epoch, and that concur to consolidate a dynasty; for the good that they produce, and the gratitude they inspire, extend to the latest posterity. It does not belong to me to refer to the political advantages of which such an institution is the source; besides, others have

acquitted themselves of this task so well, as to leave nothing to desire on that subject.*

But, to indicate, in brief, the influence that the foundation of public libraries must have exercised upon ancient civilization, it would be sufficient for me to say that it has been compared, very justly, to that which the art of printing has exerted on modern civilization.

Two of the lieutenants of Alexander appear to have conceived the same project about the same time, so that it is now very difficult to decide, to which of the two belongs the priority. One was Eumenes, governor of Pergamos and Mysia; the other, Ptolomy Lagos, who had command of Egypt. At the death of the conqueror of Asia, the generals that he placed at the head of the provinces of his vast empire, shook off all dependence on the central government, and endeavored to consolidate their authority in every possible way. The greater number turned their attention entirely to arms, either to maintain their own government, or to invade those of their colleagues. The sovereigns of Alexandria and Pergamos were the only ones, amongst so many captains, who occupied themselves with the interests of commerce and arts, and it was about that time, that they laid the foundation of the first two public libraries. They took hold of the enterprise so actively, that they, and their immediate successors, within about a century, had gathered two hundred thousand volumes for the library at Pergamos, and six to seven hundred thousand for that at Alexandria. This last was divided into two parts, which were called the great and little library. The first contained nearly four hundred thousand volumes, and was located in the quarter named Bruchion, near the Museum and the palaces, and in the neighborhood of the port, where the grain ware houses were situated; the second was in the temple of Serapis, or Serapium, situated in a distant quarter, nearer the center of the city.

It is not possible, from the above enumeration, to form an exact idea of the accumulated riches in these two great book depots; for writers differ very much, when on the subject of estimating the volumes, or rolls of the ancients, compared with modern books. Some presume that the six hundred thousand Alexandrian volumes represent two hundred thousand of ours; others one hundred and twenty thousand; others ninety thousand. However it may be, literary collections of such magnitude were a wonderful and happy result under the circumstances. The kings of Egypt, and those of Pontus, felt perfectly, what eclat such

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*Notably M. Matter, author of the History of the School at Alexandria, from whom we have borrowed the major part of the details we here furnish on that school.

institutions would throw upon their capitals and their names. At first, their efforts to collect works, excited a praiseworthy rivalry, but this subsequently degenerated into a contemptible jealousy, in some of their successors, which led the sovereigns of Alexandria to interdict the exportation of papyrus, so as to prevent their emulators of Pergamos from being able to make copies of manuscripts. This illiberal prohibition had a contrary effect than was expected, for it led to the invention of the paper of Pergamos, otherwise called parchment, the use of which became general, and displaced, advantageously, the bark of the papyrus.

Nevertheless, the institute of Alexandria always preserved a great superiority over that of Pergamos; it had especially a marked influence on medical studies, and merits, on that account, a particular notice on our part.

## CHAPTER I.

### THE SCHOOL OF ALEXANDRIA.

The chief of the dynasty of the Lagides, Ptolomy Soter, was not contented with collecting, at a great expense, an enormous quantity of books; he felt also the necessity of having order and choice in his collection. To effect this, he called around him men, the most renowned for their erudition, and gave them residences near the library, and created a revenue for their maintenance. Some were charged with the classification, collation and annotation of the manuscripts; and the copies that underwent this labor of revisal were then entered in the catalogue. Other savans, equally at the expense of the State, occupied themselves with the investigations and studies of their taste, being confined to no particular task; only, they were required to meet together on certain days, to deliver lectures and discuss various subjects. The king himself sometimes took a part in these re-unions, by proposing different questions for solution, and taking part in the discussions.

These re-unions became still more frequent and formal under Ptolomy Philadelphus, son and successor of Soter. They were called *ludi musarum et Apollinis*, literary contests or feasts, and the palace where they were held was named the Museum. Often the subject for discussion was announced beforehand. Those who succeeded best, received public eulogies and rewards proportionate to the merit of their compositions. All the savans, artists and professors, that lived in Alexandria, were not lodged in the Museum, nor pensioners of the king; that honor, and the privileges which were attached to it, were accorded to a very small number. Amongst those who enjoyed it, under the reign of the first two

Lagides, only two physicians are named, viz: Herophilus and Erisistratus. The latter, it is said, was the grandson of Aristotle, and pupil of Theophrastus. He did not reside in the capital of Egypt till the close of his life; for it appears that, in his old age, he retired to Smyrna, where he founded a school.

It was under Philadelphus that the Hebrew savans were charged with the translation into Greek, of the Holy Scriptures; and it is well known that the translation they made, called the Septuagint, has always been highly esteemed. An Egyptian priest always presided over the museum, so that the Alexandrian Institute included the debris of the antique science of Egypt, the doctrines of the Jews, and the more recent compositions of the philosophers and literati of Greece. Besides, the sovereigns of Egypt sent more than one expedition into the interior of Africa, along the coasts of the Red Sea, and as far as the East Indies, to make discoveries and establish relations in the interests of commerce and the sciences. Thus the torch of civilization, which had anciently shone upon the banks of the Nile with a mysterious and isolated light, returned, after being increased and vivified at the free fires of the genius of Greece, to shed an éclat more resplendent than ever on its early cradle; and thus the city of the Ptolomies became not only the entrepôt of Greek and Roman commerce, but also a scientific focus, whose light was shed for ten centuries upon the antique universe.

Amongst the sciences which received the most encouragement in the Institute of the Lagides, we must place in the first rank that of Medicine. By a concourse of happy circumstances which we shall presently enumerate, the school of Alexandria eclipsed, from its origin, the ancient schools of Cridas, Cos, and Pergamos; and while it existed, it was not equaled by any other. In the time of Galen, it sufficed to have studied in that city, or even to have resided there for a time, to obtain the reputation of a physician. Nearly all the men who became distinguished in the different branches of the healing art, for a considerable length of time, had received instruction in that school, or had been there, to perfect their knowledge in their profession.

The success in the cultivation of Medicine in the Greco-Egyptian Institute, was due, as we have said, to several causes, at the head of which we must place the authorization accorded by the founders of that establishment, for the dissection of human corpses. Doubtless that authorization, nearly unique in antiquity, gave to the anatomical, physiological and surgical sciences an extraordinary impulse. But the princes of the family of the Lagidæ did not content themselves with delivering over to the scalpel of the anatomists the corpses of criminals; they participated themselves sometimes, it is said, in the labors of dissection;

so anxious were they to penetrate the secrets of nature and life. Perhaps, also, they did so to destroy, by the force of their example, the odium to which the physicians exposed themselves by their anatomical researches.*

The Ptolomies did not favor less the progress of natural history and the materia medica, by the collection of rare animals and plants that were made for the museum, near their palace. They spared, if we may believe the tradition respecting it, neither expense nor care to render these collections as complete as possible; they were proud to exhibit them to the savans and travelers of distinction whom the renown of their intellectual riches attracted to their capital; a policy both eminent and liberal, and which, even after the destruction of the kingdoms of Egypt, maintained the city of Alexandria in the rank of the first cities of the empire.

Nevertheless, the practice of dissections did not long continue in favor, even in the city where it had its origin; scarcely did it continue to exist to the end of the second century. Consequently, science very soon took a bad direction at Alexandria; natural researches were replaced by subtile discussions on subjects idle or inaccessible to the human understanding. But of all the scourges which hindered the progress of medical science in Egypt, that of the Roman domination was the most fatal. That royal people, who delighted to see blood flow, not only on the battle-field, but also in their diversions and daily exhibitions, regarded as a profanation the contact of a corpse; so that not a single anatomist of any reputation had his origin in Rome. If, on any occasion a foreign physician, attached to the persons of the Emperors or Generals, desired to avail himself of the occasions that were afforded, to examine the structures of the internal parts of the human body, he was obliged to conceal and carry off, during the night, some body abandoned to the birds of prey.

To complete our misfortune, the labors of the physicians who illustrated the first epoch of the school of Alexandria, are all lost; we only know of them now by tradition, and by fragments that writers of a later period have preserved. The burning of the great library, by Julius Cæsar, was the beginning of a chain of disasters with which the Roman domination cursed the Alexandrian Institute. However, Queen Cleopatra, whose enlightened zeal for the sciences has rendered her quite as celebrated as her beauty, her frailties, her crimes, and her death—Cleopatra, I say, repaired as much as possible this loss, by obtaining from

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* Pliny, Natural History, T. XIX., p. 5. Lanth. Hist. de l'Anatomie, Strasbourg, 1845.

her spouse, Mark Antony, the transportation of the library of Pergamos to Alexandria. But a more grievous and irreparable blow was given to this establishment, by the atrocious and imbecile Cavacalla, who, after having assassinated the greater part of the inhabitants of the city, took from the pensioners of the Museum the privilege of living together, and the other advantages which they enjoyed, and suppressed the public exhibitions and discussions.*

We can now only trace the progress of science through that period, by collecting and comparing the debris which have been preserved by Galen, Aretæus, Cœlius, Aurelianus, Celsus, Dioscorides, Pliny, and some others. It is by the aid of these scattered documents that we proceed to reconstruct the scientific edifice of Medicine, as it existed at the end of the second century of the Christian era. In attempting this, we shall follow the same order that we have already adopted, namely, commence by showing the material progress of each branch of the art, and reserve for the end the discussion of the themes and systems of the time.

## CHAPTER II.

### ANATOMY AND PHYSIOLOGY.

We have seen, that after bringing together all the fragments the Hippocratic writers have transmitted to us, relative to the structure of the human body, it would be impossible to compose from them a regular or complete treatise on anatomy; for, with the exception of the skeleton, they possessed very limited and imperfect notions of any organic apparatus. They confounded, under a common name, the nerves, ligaments, and tendons; they did not distinguish, or very imperfectly, the arteries and veins, and the muscles, in their eyes, were inert masses, designed solely to cover the bones, and serve as an envelope or an ornament. They possessed, in short, only gross and false ideas, on the structure and functions of the brain, heart, liver, lungs, digestive and generative apparatus — for the reason that they had never been able, as well remarks the author of the History of Anatomy, to devote themselves to regular dissections; but this did not prevent them from adducing very decisive opinions on the organs and their functions, which no one could either verify or deny.

Let us now see what additions and what improvements the physicians of the following period conferred upon that state of the science. Galen

* Hist. de l'Anatomie, p. 117.

is the sole author of that period, whose writings on anatomy and physiology have not entirely perished. We have several works of his on these subjects, which treat especially on these two branches, viz: First, a monograph on the Skeleton, in which he recommends that the bones be not studied in books only, but that they be seen and handled; and to do that, he advises the student to go to Alexandria, where the professors, he says, will place before him the human skeleton. This advice of Galen proves, that in his time there was not in Rome a single skeleton, on which to demonstrate osteology. Secondly, a complete treatise on Anatomy, divided into fifteen books, of which six are wanting, entitled, On Anatomical Administration. Thirdly, an anatomo-physiological treatise on the Functions of the Regions of the human body—distributed in seventeen books, which we have entire. And finally, a quantity of anatomical and physiological details, scattered in various writings, which relate to other subjects. It is, then, from the writings of Galen, chiefly, that we draw what we have to say on the progress of anatomy and physiology, in the period extending from the foundation of the Alexandrian library, to the end of the second century of the Christian era.

### SKELETONOLOGY.

We have said that the osseous system was, of all the organic apparatus, the one best understood by the Asclepiadæ; nevertheless, their successors added many details to the descriptions they had given of it. They studied especially, with more care, the formation of bones, their internal structure, and mode of union. Galen says, that the bones are hard, cold, dry bodies, of an earthy nature, possessing no sensibility, because they are destitute of nerves, but able to realize pain through the membrane covering them, which is named the periostium. They served to sustain the whole mass of the body, and are formed directly from the semen; the greater number have a marrow, from which they obtain nourishment. Their various modes of union, he reduced to two, namely, symphysis and articulation. By symphysis, two bones are joined or glued strongly together, so that they can not move on each other. By articulation, on the contrary, they are placed in juxtaposition, and move more or less freely on each other. The ligaments maintain and fix the articulations; they are white structures, flexible, and elastic, harder and thicker than membranes. The cartilages, which terminate certain bones, or even take their place in certain structures, such as the nose, ears, and wind-pipe, have almost the hardness of bones, with the flexibility and elasticity of ligaments.* The author of the

* Galen, De Ossibus, edition of Chartier, T. IV. De Anatomicis Administrationibus, lib. I, T. IV.

History of Anatomy says, that Galen was profoundly versed in the knowledge of the bones; that he described them nearly all, individually, and that there are few of them, which are not mentioned by name in his works.

### MYOLOGY.

The muscles (*chairs*) were no longer considered as inert masses, serving only to cover the bones, and protect other parts; they were divided into distinct fasciculi, and named muscles. The form, composition, and uses of each muscular faciculus, was studied separately, and they were recognised as constructed of minute fibres, or filaments, between which the veins, arteries, and nerves ramified, carrying nutrition, life, and sensation. It was proved by convincing experiments, that the muscles are indispensable to the accomplishment of voluntary movements. Galen, being desirous to teach the mechanism of locomotion, and to prove that the muscles take an active part in it, was accustomed to expose on an animal, the extensor and flexor muscles of a member, and then demonstrate how the alternate tension and relaxation of the muscular fasciculi set the bones in motion, after the manner of levers.

He says that the muscles are so numerous, that they cannot be easily counted, and unite in such a manner, that several seem to form but one, and when they divide, there appears to be as many as there are tendons. It is not wonderful, after this avowal, that he omitted several; nevertheless, he pointed out, and named a great number. He classed them according to their uses, and this method, which has been followed even till our day, by many anatomists, is the most advantageous with which to arrive at the knowledge of the movements executed by the parts, though it may not be the most commodious to guide us in an anatomical examination.*

### ANGIOLOGY.

The Hippocratic authors confounded the arteries with the veins.

Praxagoras was the first who distinguished these two orders of vessels, but he supposed that the arteries contained air, and not blood. He therefore gave them the name they still bear, which signifies, according to their etymology, aerian canal. Aristotle and Erisistratus, having adopted this view, it prevailed until the time of Galen, for this author devoted an entire book to refute it, sustaining himself upon the observation, that at all times, when an artery is wounded, the blood gushes out.

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* Galen, De Constitutione artis medic. cap. III., Chartier, T. II, De Anatomicis administration ibus, lib. I., II., III., IV., V. De usu partium corporis humani, lib. III., cap. V.

He added to this experimental proof, many theoretical reasons, which, doubtless, he supposed appropriate to fortify it, but which now appear very obscure and useless.*

He placed the origin of the veins in the liver, which he regarded as the organ of sanguification, by which he shows himself less advanced than Aristotle, who considered the heart as the common source of the arteries and veins. He compares the arterial and venous system to a tree fixed by its roots in the soil, from which the trunk arises, and is developed by ramifications. The divisions of the vena portæ form the roots of the venous tree, the vena cava its trunk, whence proceeded the boughs and twigs, distributed to every part. So, also, in the arterial system, the pulmonary artery constitutes the roots, the aorta the trunk, which is ramified like branches and twigs, to all parts of the body. Among the branches of the vena cava superior, he reckons the vena azygos, the internal, mammary, etc., etc., and among those of the vena cava inferior, he describes the renal, spermatic, uterine, and other veins of the inferior extremities. In the table of the arterial system, he erroneously distinguishes a superior and inferior aorta. The history of the ramifications of the superior aorta is a little confused, but the description of aorta inferior is more exact. Our author makes mention of umbilical veins and arteries. He is also not ignorant that the veins are more numerous than the arteries; for while the latter, he says, are always accompanied by veins, the veins are often found separately from arteries.†

### NEUROLOGY.

Galen states that all the nerves are derived from the brain and spinal marrow, which was contrary to the views of Aristotle, who supposed them to originate at the heart; but the physician of Pergamos proves that he, as well as those who followed him, confounded the nerves with the ligaments and tendons. He points out also two sorts of nerves, one of which, those of sensation, are soft, and proceed from the brain; the nerves of motion, are harder, and originate in the spinal marrow. He enumerates seven pairs of cerebral nerves, which comprises all that are admitted now, except the sympathetic, and the external motor of the orbit; thirty pairs of spinal nerves, which he divides as follows: eight cervical, twelve dorsal, five lumbar, and five sacral. "Thus," observes M. Daremberg, "Galen describes distinct nerves of sensation and motion; but he did not know that each nerve, by its double origin on the anterior

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*Galen. *An in Arteriis natura sanguis contineatur.* Chartien, Tome III.

†Ibid., *De Venarum et Arteriaram discestione*, T. VI. *De usu partium.* Th. Lanth Hist. d l'Anatomie, liv. v., part i., sect. i., chap. iii., § 4.

and posterior parts of the spinal marrow, contained both sensory and motor filaments." The ganglions of the nervous system, were well known to him, and he claims their discovery. "Nature," he says, "has done an admirable thing, of which all anatomists, to the present time, were ignorant. When she conducts, for a long distance, a fine nerve, or one is destined to excite violent muscular movements, she locates a little mass on its track, that resembles it in structure. Seen externally, this body appears to rest upon, and surround the nerve; but when it is dissected, its substance is found to be in continuity with the nerve combining with its structure, and resembling it in every particular. It is by means of this substance, which resembles a ganglion, that nerves augment in size."*

Lastly, this eminent anatomist had some notions of the great sympathetic, though he may not have formed a complete idea of that nerve.

To prove that the faculties of motion and sensation were transmitted from the encephalor to other parts of the body, by the nervous apparatus, he advised that the principal nerve of any member be divided; at once, he remarks, the parts situated below the section, loose their faculties of sensation and motion, while those above retain both.†

### ADENOLOGY.

"Galen," says the author of the History of Anatomy, before quoted, "gives no anatomical description of the glands, though he may have been acquainted with the fluids secreted by several of these organs. After enlarging on the secretion of the prostrate gland, he passes to the mucus and saliva contained in the mouth, to the bile secreted by the liver, and to the humors furnished to the intestines by various glands. Sustaining the opinion of Marinus, on the functions of glands, he says that the salivary glands transmit the saliva into the mouth by particular veins. He terms the mammæ also, glandular bodies. Is it not, then, strange, that with the knowledge this great man possessed of the fluids furnished by the various glands, the idea was never suggested to him, to attribute to those bodies, the special function of preparing a useful fluid, instead of regarding them as receptacles of an excrementitial humor of the emunctory vessels? That happy idea never occurred to him; the preparation of a fluid was always, in his eyes, a very secondary affair in the functions of glands; the supposition of veins which carried

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* Galen, *De usu partium*. Lanth. Hist. d l'Anat., liv. v., part I., sect. I., chap. III., § 5.

† De Constitutione artis., cap. III.

the saliva into the mouth, was only imaginary, for his idea of them has no agreement at all with the salivary duct, now called the duct of Steno.*

### SPLANCHNOLOGY.

Galen divided the interior of the body into three cavities; namely, the abdominal, thoracic, and cranial, of which last, the vertebral canal is an extension. He distinguishes in each of these, the viscera from their envelopes; of the latter, which are common to all, he reckons the skin, composed of two lamina, the dermis and epidermis; the fat; the muscles with their aponuroses, vessels and nerves; the bones; and some membranes. The viscera being different in each cavity, require to be enumerated separately.

#### I. ABDOMINAL CAVITY.

It includes the apparatus of the natural faculties, which he divides into the organs of nutrition and reproduction. The nutritive organs are of three kinds. The first receive the food, dispose of, and distribute it to all parts; they are the mouth, esophagus, stomach, intestines, and veins of the liver. The second, which appear destined to eliminate excrementitial particles, are the liver, which attracts the bile, the spleen, the kidneys, and their appendages. Lastly, the third class, which serves for the expulsion of fecal matter, and which, in order to be controlled by the will, is furnished with muscles. Galen describes in detail the form, situation, and structure of each of these organs. (See especially the Anatomical Administrations and the treatise on the Functions of the Organs; see also the Hist. de l'Anatomie, already cited.)

The reproductive apparatus is composed in man of testicles, placed out of the body, in the scrotum, sanguineous vessels, and nerves; the epididymus, a small body placed on the upper part of the testicles; the spermatic canal, or vas deferens; the vesiculæ seminalæ; the prostrate gland; and the penis, which is a nervous and hollow body, springing from the ossa pubis, but containing no humor. In women, whose nature is colder than that of man, the sexual parts are placed in the interior of the body. The testicles, which are smaller, are situated on the sides of the uterus, and within the abdomen. The spermatic ducts (uterine tubes) unite the testicles to the uterus, which is placed between the bladder and the rectum. Galen speaks of two uterine cavities, one on the right, destined for the male fetus, the other on the left, for the female. From this statement we may question whether he ever examined the uterus of a woman. The presumption is, that he had studied this organ in animals only, for he says, that the number of the departments in the

* Lanthion, Hist. de l'Anat.

uterus is equal to the number of mammæ. The bottom of the uterus is turned toward the stomach; its neck looks downward, and is continuous with the vagina, which is a membranous canal, terminating externally at the vulva. In coition the semen of the male, which is hotter than that of the female, mingles with the latter, which serves as an excipient and nutritive material; from this results fecundation. The semen changes at first into membranes, then a portion of these are transformed into cartilages and bones; another portion is folded and hollowed, and extends itself in the form of pipes, which constitute the arteries and veins; another is drawn out like fine threads, whence proceed the fibers and nerves, and so on, for the rest of the tissues.*

### II. THE THORACIC CAVITY.

It is separated from the abdomen by the diaphragm, a species of round muscle, large, flat, and thin, having its tendons in the middle. It includes, among other things, the heart and lungs, organs of the vital faculty. The heart, situated in the middle of the breast, a little to the left side, lies upon the lungs, as on a downy bed. It has the appearance of a muscle, but differs from one in many respects. In the first place, its substance is much harder, and more resisting than muscular flesh; in the second place, it is formed of straight, transverse, and oblique fibers; in a word, the fibers run in all directions, which is not the case in ordinary muscles. Lastly, the heart possesses its own proper movements, which do not depend upon nervous agency, as may be seen by opening the chest of a living animal; for when the heart is separated from all other parts, it continues its movements for some time with much force. This organ is the source of natural heat, and the vital spirits; the seat of anger, and violent passions. His opinions on the movement of the blood, will be alluded to hereafter.

The lungs, a spongy viscus, which nearly fills the whole cavity, is divided in its length into two unequal cavities; the right half, which is the largest is separated into three lobes; the left one into two. These lobes all comunicate, by means of cartilagino-membranous tubes, with a common tube, which is called the trachea-arteria. This proceeds upwards, along the median line, in front of the esophagus, to the back of the mouth, where it terminates by an orifice called the larynx. He divides the acts of respiration into two periods; in the first, which he names inspiration, the thoracic cavity is enlarged, and the external air is drawn through the trachea into the lungs. During the second period, which is that of expiration, the impure and grosser part of the air

* Galen, De usu partium. De semine, et alibi.

contained in the chest are expelled outwards, with the fuliginosities of the heart, while the more subtle part passes into the venous artery, to be carried to the left cavities of the heart, where it aids in the support of the natural heat, the formation of vital spirits, and the completion of the arterial blood.*

### III. CEREBRO-SPINAL CAVITY.

This differs from the two preceding; first, in that it is shut in on all sides by bones; secondly, in place of being lined interiorly by a single membrane, like the thorax and abdomen, there are two—one thick, hard and fibrous, the other thin and smooth, precisely like the peritoreum, or pleura. This cavity encloses the organs of the noblest of the faculties, the animal faculty, of which the essence is nothing less than the reasoning and immortal soul.

In the upper and anterior part of the cavity is found the brain, an oval, but not very consistent mass, of a gray color on the surface, but white otherwise, and divided into two halves or hemispheres, by a very deep longitudinal furrow. Beneath it, and behind, is the cerebellum or smaller brain, whose substance appears to be firmer, though its volume scarcely equals the fourth of the brain. These two fill the cranial cavity, but they are distinct and separated in nearly their whole extent by membranes; they have a common bond of union, which is called the meso-cephelon, which is situated at the base of the cranium. At this point the spinal marrow commences, which descends the whole length of the spinal canal. Its substance is analogous to that of the cerebrum and cerebellum, and is a prolongation of the latter. Galen describes separately each of the three portions of these viscera. He describes their exterior form and connections with neighboring parts: then, penetrating into their interior by methodic sections, he studies their intimate structure, the disposition of their smallest parts, the origin and distribution of their vessels, etc. He follows each nerve into the structure of the brain, until it is lost in the mass.

When the brain of a living animal is uncovered, by removing a portion of the vault of the cranium, that viscus is seen rising and falling, alternately. This phenomenon did not escape Galen, who compared it to the pulmonary respiration, and attributes it to the same cause. He thinks that the brain expands like the lungs, to draw in the air, and then contracts to expel it. According to him, the atmospheric fluid penetrates the cavity of the cranium, through the cribi-form plate of the ethmoid bone, and passes out by the same route, carrying with it

* Galen, De Usu Partium. De Anatomcis Administrationibus.

the excrementitial humors of the brain, which run into the nasal fossæ. Nevertheless, says this physiologist, the air introduced into the cephalic cavity, by inspiration, is not entirely rejected by expiration. A portion insinuates itself into the anterior ventricles of the brain, and unites with the vital spirits, which are carried there by the arterioles of the choroid plexcus. From this combination originate the animal spirits, the immediate agents of the rational soul, and the most subtle of all the spirits. These acquire their last attenuation in the fourth ventricle, where they are instilled, if one may say it, drop by drop, through a round, narrow, vermiform tube (the acqueduct of Sylvius). Then the animal spirits are transfused into the substance, even, of the brain, little brain, and spinal marrow, where they are kept in reserve, to be distributed by the agency of the nerves to all parts of the body; and they give to each region, according to the direction and wants of the animal faculty, sensation, motion, and energy.*

The above sketch of the anatomy and physiology of Galen, though very brief, represents to us the state of these two branches of medical science, at the end of the second century of the Christian era, and gives us an idea of the progress that was made during the Anatomical Period. This progress was immense; and when we consider that the greater part of it was effected in the first two centuries of the foundation of the Alexandrian school, and that it was due chiefly to the labors of Herophilus and Erisistratus, we are astonished at the rapid development, as well as the happy direction, that these two great men gave to anatomico-physiological studies. Not only did they devote themselve to numerous dissections of the human body, but they often resorted to vivisections of animals also. The chronicle says that one of them, Herophilus, did not hesitate to employ his scalpel on living criminals that were subjected to his experiment, for the interests of science; but it is proper to say that this is not alluded to by any cotemporary author—it was only recorded as a popular tradition, three or four centuries later;† so that it is considered doubtful by many historians, who remarked, besides, very correctly, that the same report has been falsely circulated at different epochs, against other celebrated anatomists. However this may be, the manners, too often unpitying, of the ancients—the contempt which they generally expressed for the sufferings of criminals and slaves, permit us to believe that, occasionally, men may have been found so lost to the sentiments of humanity, as to deliver to the knife of the anatomist the unfortunate condemned, in the hope of discovering, in the depths of

* Galen, De Anatomicis Administrationibus. De Usu Partium.

† Celse, Traité de la Médecine, Préface.—Tertullien, De l'Ame, chap. x.

the palpitating entrails, the secret of life and the means of prolonging it; nor is it more improbable that some fanatic in science may have lent himself to this odious research; for, alas! all fanaticism is pitiless.

Nevertheless, as before remarked, the zeal for dissections rapidly cooled off, as Galen barely mentions five or six men who devoted themselves to it, from the first anatomists of Alexandria down to his own time—i. e., through the space of nearly four hundred years. He cites a Rufus of Ephesus, who lived probably under Trajan; a Marinus, who wrote in the beginning of the second century of the Christian era; a Quintus, who did not compose any work on anatomy, but who instructed several pupils, among whom are counted Pelops and Satyrus, who were the preceptors of Galen. None of these anatomists have left a reputation approaching that of Herophilus and Erisistratus. Galen alone can sustain a comparison with these last, by the great number of his experiments and anatomico-physiological discoveries. In vain he strove, by his example and exhortation, to awaken in his cotemporaries a desire for the study of anatomy, which, within proper limits, is the surest guide in practical medicine; but he could not overcome their indifference. After him, the practice of dissection appears to have been lost, either from the redoubled prejudice of the superstitious, who opposed dissections, or as the result of the ignorant apathy of the physicians.

## CHAPTER III.

### HYGIENE.

Hygiene, during this period, did not progress as rapidly as anatomy and physiology; nevertheless, it was not entirely stationary. Celsus has recapitulated, in his first book, the most accredited hygiene precepts of his time. He commences by addressing some general counsels to men in robust health. Then he explains, more at length, the regimen which is suitable to delicate persons; amongst whom he classes the greater part of the inhabitants of cities, and, in particular, men of sedentary lives. Lastly, he traces the rules applicable to different ages, seasons, sea voyages, in certain idiosyncrasies, and other circumstances, His prescriptions relate principally to the choice of food and drinks, the use of baths, the alternation of repose and labor, the repast, gymnastic exercises, artificial dejections excited with a view to health, either upwards or downwards. If he adds but little to the materials transmitted by the writer of the Hippocratic collection, he has at least the merit of presenting them with more order and precision.

The writings of Galen, on hygiene, are numerous; they form the whole of the sixth volume of the edition of Chartier, in folio. The most considerable are, a treatise on the Preservation of Health, divided into six books, and a treatise on the Qualities of Food, in three books. He divides life into four periods—infancy, adolescence, manhood, and old age. He insists on the precepts relative to the first and last of these periods, much more than any of his predecessors had done; he enters, especially, into new and interesting details concerning infancy. He has also better appreciated than any other writer, the influence of habit, and was the first to feel the necessity of making the regulation of the passions a part of hygiene. This was the limit of the effective progress of this branch of the art, from the foundation of the Alexandrian library down to his epoch.

The pure observation of the good or evil which we realize after the use of certain articles, was the first source of hygienic researches, as is also shown by the following passage of an author whom I have frequently cited: "In going back," he says, "to past ages, I think that the regimen of life and nutrition which are employed in health, in our days, would not have been discovered, if man, for his food and drink, had been able to content himself with that which suffices for a bullock or a horse, and other creatures out of the pale of humanity; that is, on simple productions of the earth, such as fruits, herbs, and hay. Animals are nourished by these, and grow, and live, without any inconvenience, and without the necessity of any other alimentation. Doubtless, in the earliest times, man had no other food than the above, and that which he now employs, it appears to me, is an invention elaborated in a long course of years. But food so strong and crude, would cause much violent suffering, as is realized now, among those who sustain themselves on crude, coarse, indigestible, and exciting food; intense pain and diseases are developed, and a speedy death. Men suffered less, doubtless, in the beginning than now, on account of its habitual use; nevertheless, the evil was great even for them, and the greater part, especially those of a feeble constitution, perished, while the more vigorous could longer resist its injurious tendencies. Such was, it seems to me, the cause that engaged men to seek a preparation of food in harmony with our nature, and they gradually discovered that which we now employ. Thus learning how to macerate, thresh, sift, grind, and knead the grains, they fabricated wheat bread and barley dough, which they have used in a thousand different forms. They have boiled, roasted, made compounds of, and reduced with weak substances, those articles which were too strong, and prepared everything to suit the nature of man."*

* Œuvres d'Hippocrate, De l'Ancienne Médicine. § 3; translated by M. Littré.

This method, both simple and sure, but slow and timid, did not suit the taste of certain philosophers; they imagined one much more complicated, and which appeared to them more transcendant and direct. The following quotation shows in what terms their method is described by one of those philosophic physicians: "I maintain," he says, "that to write well on the regimen of man, it is necessary, in the first place, to be well instructed as to his nature, to know what man is, in his origin, and what are the parts of which he is composed. If one is ignorant of his earliest composition, and what predominates in his constitution, how can he prescribe what may be useful to him?"*

Such a course has something very seducing in it, at first sight. It attracts by an appearance of exactness and profundity; but, if we judge it by its results, we shall be convinced, very soon, that it is only calculated to obscure and perplex by philosophic speculations, entirely ideal, the most enlightened and experienced minds. The author from whom I have taken the last extract, furnishes himself a proof of this. He devotes very vainly, as we have heretofore remarked, under head of Philosophic Period, all the first part of his work to demonstrate that man and animals are a compound of two principles, water and fire, and he endeavors, then, to rest on this philosophic base, his maxims of hygiene.

Galen has followed the same course; that is, he endeavors to rest on his physiological theories, the laws relating to the preservation of health; but this plan only leads to digressions, as fastidious for the reader as sterile for science. On this foundation, he wrote a book, to teach what is the best constitution of the human body, and what are the signs by which we may know it, and how it resists the perturbating influences; also, another, to explain what is to be infered from the complexion, and in what a good complexion differs from an athletic one; a third, in which he agitates, at great length, this question, which may be reduced to a few lines—is hygiene within the jurisdiction of medicine or gymnastics? Thus, four-fifths of his writings on hygiene, at least, may be dropped or shortened, without any real loss to the art.

Galen gives to health a definition conformed to his theoretic ideas; but so unintelligible is it, that he is obliged to accompany it with an explanatory commentary of many pages. Here is his definition: "Health consists in a just proportion of heat, cold, dryness, and moisture, for similar parts; and in the good conformation, the exact number, and proper extent of all organic parts."† In short, he pretends to make all the precepts of hygiene proceed from an unique principle.

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* Œuvres d'Hippocrate, Du Regimen, liv. 1. § 2 Gardeil.

† De Sanitate Tuendâ, lib. 1, § 1.

"We know," he says, "that we must give similars in a state of health, in the same way as we give contraries in a state of disease." He attempts to justify this hygienic axiom, by the authority of Hippocrates, by logic and examples; but his arguments are based on subtilties, only, and his axiom is not equal to that simple rule, dictated by instinct, and confirmed by experience: *Eat only when you are hungry, and drink only when you are dry.*

This would be the place to speak of exercises, baths, annointings, and frictions, which the Greeks and Romans so frequently employed, and which constitute a part so important, and so curious, of their hygiene; but this subject is too vast, and I fear being drawn into too long details, even if I should only attempt to touch it. I prefer referring the reader desirous to acquire a satisfactory notion of it, to the learned work of Mercurialis, De Arte Gymnastica, and the Histoire de la Chirurgie, by Peyrilhe, vol. II. book v., page 316.

## CHAPTER IV.

### GENERAL PATHOLOGY.

We have seen that in the Hippocratic works, the various branches of medical science are not well distinguished, and that often, the same treatise contains subjects very distinct from each other. It is not so with the most of the treatises which we possess of the present period; they are marked, in general, by a much more rigid, didactic order. After Aristotle, and by the influence of his expample, the authors were much more methodic in their compositions. Diseases were divided, as heretofore, into internal and external, acute and chronic, according to their supposed seat; but the authors conformed more to these classifications, than the former had done. The treatment was divided into hygienic, pharmaceutic, and surgical. In fine, it may be said, that the love of method was carried to an excessive degree. There were authors, such as Galen, who, from a desire to be very methodic, fell into distinctions more subtle than real, and lost that greatest of the advantages of method, clearness.

Many historians, among whom are Leclerc and Sprengel, supposed, that at that epoch, the medical profession was divided into three orders, which correspond to the three divisions of the science, shown above. They say, that from that time, there were dietetic physicians, who confined themselves to the regulation of the regimen of the sick; pharmaceutists,

who prescribed internal remedies; and surgeons, who made dressings and performed all manual operations. Goulin was the first to show that these statements are erroneous.* Afterwards, Shulze demonstrated, that the division of Medicine into hygiene, pharmacy, and surgery, as introduced by Celsus, must be understood in a scientific, and not in a professional sense.† Lastly, B. Peyrilhe, after having quoted the opinions of his two predecessors, corroborates them by new considerations. "To these opinions," he says, "so much the more respectable, because they come from two physicians profoundly versed in the history of their art, we join a reflection which could have been made before, though it has not been: that if this division of Medicine existed in the profession, as it did in the Art — if it was civil, as it is certain that it was scholastic, we should be able to discern, very distinctly, among the Romans, three classes of physicians. Now, where shall we find them? All the efforts of some modern investigators, have not been able to show the existence of a single one of these classes alone. Such, for example, as surgeons, that is, men who limited themselves to surgical operations.‡

## CHAPTER V.

### INTERNAL PATHOLOGY.

#### § I. Semeiotics.

The Asclepiadæ, as we have already observed, considered morbid phenomena, not as the expression of the suffering of any particular part, but of that of the entire economy — the result of vital reaction, excited by a morbid element. Starting with this philosophic idea, they studied each symptom, independently, without reference to the supposed state of the internal organs of the body. On this account, they carried Semeiotics, or the knowledge of symptoms, to a very high degree of perfection. These priest-physicians were remarkable for the certainty and boldness of their prognosis, as we have proof in many treatises of the Hippocratic collection.|| We owe to one of them a capital discovery, and which seemed destined to give a new impulse to this branch of the science.

* Mémoires Littéraires, pour servir à l'Histoire de la Médicine, année 1775, p. 28, et suiv.

† Historia Medicinæ, a rerum principio, 1775, p. 28, et al.

‡ Histoire de la Chirurgie, de Dujardin et Peyrilhe, Paris, 1780.

|| See, among others, the Traité du Prognostic, and the second book on Prorrhétiques.

Praxagoras was the first to observe, at the termination of the preceding period, the close connection between the variations of the pulse and the energy of vital reaction; from that time, it was thought that the regulator, or the exact measure, of all the vicissitudes which the vital principle experiences in the course of the life, was found. The slightest shades of variation in the arterial pulse were noted with the most scrupulous attention, and an effort was was made to attach to each variety a determinate signification. Consequently, there was defined a pleuritic pulse, that is, a condition of the pulse indicating pleurisy; a suppurative and phthisical pulse, and so on for each disease. So, also, there was a hepatic, splenic, nephretic pulse, indicating the conditions of these organs; in a word, they pretended to be able to distinguish, by appreciable variations of the pulse, all the modifications, normal or abnormal, grave or slight, of the organic functions. Galen has written on this subject a complete treatise, in four sections, each comprising four books, and several monographs.* In the first section of the first book, he points out more than sixty species of the pulse†. He also presents and discusses the three opinions, which prevailed in his time, on the *efficient* cause of arterial pulsations. Some attributed them to the blood, that each contraction of the heart caused to flow in the arteries; others, that they were the effect of the passage of the spirits; others, again, believed with Galen, that the pulsative faculty is transmitted from the heart to the arterial tubes, by continuity of tissue.‡

The Greek Sphygmology was carried to the Indies by the disciples of Herophilus and Erasistratus, under the successors of Alexander the Great: thence it was carried to China, where it still reigns, but disfigured and contemptible. In Europe, the Sphygmic theory of Galen was not subjected to any notable variation, till the discovery of the circulation of the blood. Next to the signs manifested by the examination of the pulse, those furnished by the inspection of the urine occupied the highest place in the semeiotics of the ancients; but the chief writings on uroscopy being posterior to the epoch of Galen, we shall not further allude to this subject now.

To resume: if we compare the labors of the school of Cos on semeiotics with those of the school of Alexandria, we shall remark between them a well-defined difference. The Asclepiadæ grouped together the most apparent symptoms of a disease, and the circumstances attending

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* See vol. VIII, of his complete works, edition of Chartier.

† Ibid., Des différences des Pouls, liv. I.

‡ See the book in which he examines if the arteries naturally contain blood; chap. VIII., edition of Chartier, vol. III.

their course; they founded upon these the rules of their diagnosis and prognosis. The Erasistratians, or Herophilians, on the contrary, regarded each symptom, or a single order of symptoms, separately; they studied these in every aspect—examining their most delicate shades, and searching, minutely, their causes and various significations. The synthetic method of the first is imposing, but is superficial, and often defective. The analytic method of the second affects exactness, and deep research; but it is also often contracted and subtile, and is lost in infinite minuteness.

### § II. Nosography.

The Asclepiadæ, as before remarked, have left us only a very small number of nosological descriptions worthy to be consulted. In their treatises on pathology, they follow no rigorous classification, and do not well distinguish the morbid species from each other, and make no effort to present, in a lucid and natural order, the symptoms, progress and termination appropriate to each; in a word, they have neglected to establish the basis of the specific and differential diagnosis of diseases. This neglect of so important a branch of pathology may be explained as follows: in the first place, the defect of precise notions on anatomy and physiology incapacitated them, often, from connecting the functional derangements which they observed, with determinate organic lesions of any of the viscera; in other words, it was often impossible for them to localize diseases; now that localization is one of the most solid bases of all nosological classifications. In the second place, the general idea that the ancient Hippocratists had of diseases, prevented them from attaching a major importance to the distinctions of the morbid species. In fact, they regarded the pathological symptoms as the expression of a universal disorder, rather than as an index of the particular lesion of an organ; they had not made researches, very assiduously, to discover what is the special viscus affected, when such or such a group of symptoms was manifested.

Therefore, it may be said, that nosography was still in its infancy at the commencement of the anatomical period; but it was carried to a very high degree of perfection during this period, as is seen in what remains on this subject, in the writings of Aretæus and Cœlius Aurelianus. These two authors lived, according to the most reasonable opinion, in the second century of our era. We know nothing of the lives of either of them; all that can be said positively is, that the first was born in Cappadocia, in Asia Minor, and that the second was a native of Sicca, in Numidia.

However this may be, we possess, of each of them, a treatise, almost complete, on all the diseases observed in their time; and these treatises

constitute, without question, one of the most precious and useful memorials of antique medicine. These two writers have arranged their subjects in nearly the same order. They have divided them into eight books, of which the first four are devoted to the description and treatment of acute diseases, and the following four include the description and cure of chronic diseases. But C. Aurelianus mingles, occasionally, with his subjects, somewhat prolix, though interesting theoretic and historic dissertations; while Aretæus goes straight forward to the end, without indulging in any digression.

The work of the latter is written in Greek, in an elegant, concise, and picturesque style, which has gained him the reputation of giving the finest descriptions of diseases of any writer in antiquity. The work of Cœlius, on the contrary, is written in bad Latin, mixed with many barbarous words, very difficult to read, which is probably the cause of its not being rendered into our language. It is, however, worthy of being translated, for, in the opinion of all critics, there are few among the works of antiquity that equal it in practical utility.

Galen has also written, and even lengthily, on all diseases; but his accounts are scattered in various treatises, and buried among diffuse and subtile theoretic digressions; so that to form an opinion, after him, on the progress, signs, and treatment of a single morbid affection, one is compelled to turn over a quantity of books, and to confront a multitude of passages, oftentimes difficult to understand; an operation always long and inconvenient for the practitioner, and often impracticable. In short, this writer is neither an easy guide to follow, nor an excellent model to propose, in what concerns nosography.

The authors of this period describe, with much detail, the leprosy, tetters, nervous headache, and a multitude of other chronic affections, which the Hippocratic writers have barely mentioned, either because they supposed them incurable infirmities, or because, like Plato, they regarded them as simple inconveniences, unworthy of the meditations of men of science. Thus, then, for this extensive class of diseases, the physicians of the school of Alexandria had considerably enlarged the nosological scale. In this respect, there is no comparison to be made between their works and those of the school at Cos.

In regard to acute affections, with which the Hippocratists were more particularly occupied, the writers of the anatomical period have also added much to improve their diagnosis, as may be seen by comparing any disease described by Aretæus, with a corresponding description in the Hippocratic books. In order to facilitate this comparison, I subjoin a description of pneumonia, which the reader may compare with

that which has been previously quoted, and which is one of the very best descriptions of disease, in the Hippocratic collection.

ON PNEUMONIA.*

"Two principal things sustain animal life, food and respiration; but the latter more immediately, for when it is suppressed, life can not long be sustained, and death occurs almost instantly. Several parts subserve this function; the nostrils, where it begins, the trachea, which is its channel, the lung, which is its proper seat, and the chest, which is an inclosure and receptacle of the lung. But while the other structures named are only accessory instruments, the lung contains the cause of respiration: for the heart, which is the seat of life and attraction, is situated in the midst of this viscus, and communicates to it the heat which it generates, exciting, thus, a desire for cool air, which is the cause of respiration. On this account, when the heart is attacked, death is close at hand; but if the lung is the point of attack, and it be moderate, the breathing of the patient is difficult and painful, but death does not occur till a much later period, if treatment be employed. If, on the contrary, the attack is severe, as, for example, in inflammation, then the suffocation, aphonia, and difficult breathing put the life in jeopardy. It is this last disease, named pneumonia, that I now propose to discuss.

"This disease manifests itself by an acute fever, with a sensation of weight in the chest, without any pain, if the lung alone is inflamed; for this organ, being of a spongy tissue similar to wool, is naturally insensible, as well as the cartilagenous arteries which are inserted into it. It has no muscles, and its nerves, being small and few, do not aid its movements. The pain is manifested when some of the membranes which envelop and and attach it to the thorax are inflamed.

"The breath becomes hot, the respiration difficult, and the patient seeks to be upright, so that his breathing may be easier. The countenance becomes red, especially the cheeks; the white of the eye pearly; the nose flat, and the veins of the temples and neck distended. The aversion for food is considerable. The pulse, full at first, becomes soft and small, then is accelerated, as when one walks quickly. The skin is moderately warm and moist, but the patient realizes, internally, a fierce and burning heat, which causes the hot breath, dry tongue, thirst, the

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*Aretæus, liv. II, chap. 1. *Note.*—This author prefaces, admirably, the history of each disease with some anatomical, physiological considerations on the part where it is seated, and these are generally quite interesting.

insatiable desire to breathe fresh air, and continual anxiety. The cough is ordinarily dry, but when it is accompanied with expectoration, it is a frothy phlegm, or nearly pure bile, or something sanguinolent, of a rusty color. This last kind has a graver signification than the former.

"When the disease assumes a graver caste, the insomnia augments, the patient sleeps but little, though he may appear to sleep. His mind, agitated by a multitude of incoherent thoughts, wanders, but is easily aroused to consciousness. It is seldom that the alienation is complete. He does not know his condition, and if he is interrogated on that subject, he replies that he feels very well. The extremities become cold, the nails livid, and hooked in shape; the pulse small, frequent, and scarcely perceptible, and death closes the scene, generally about the seventh day.

"When a change takes place for the better, there is most generally bleeding at the nose, or a copious evacuation from the bowels, of bilious matter, mingled with froth, which appears to proceed from the breast, also a flow of similar material in the urine. If it happens that both of these evacuations occur at the same time, the patients soon recover.

"Sometimes a formation of pus takes place in the lungs: in such a case, it is very fortunate if it passes off by the intestines or bladder; or, if it should make a metastasis to the pleura, and an issue be established in the side of the chest, so that it may pass off, then the pneumonia is at an end. An ulcer is formed, it is true, which may continue for a length of time; but it is finally cicatrized. If it happens that the abcess bursts suddenly in the lung, this rapid effusion of a great quantity of pus suffocates the patient, who is too feeble to reject it at once; or if he is able to overcome this, an ulcer remains, which causes long continued suffering, and ends by throwing him into phthisis. It is as rare for old men to survive such an ulceration, as it is for young men, and persons in the vigor of life, to resist the violence of the inflamation."

The above is a well drawn picture of a disease, in which nothing essential is wanting, nor is the description too lengthy. More details might have been given; but none of the principal features of peripneumonia, as the disease was then known, have been omitted. All its features are traced in a natural order, and easy to be remembered; so much so, that after having read and meditated on this nosological tableau, the whole picture may be recalled at any future time, when in the presence of a disease that offers such characteristic traits, and a judgment be established of the present condition and future prospects of the patient, and the therepeutical course that should be adopted. The Hippocratic collection contains not a single description of a disease, that

can be put in comparison with this. The work of Aretæus contains, besides, a series of nosological descriptions equally as good. An opinion may be formed by the comparison, of the progress that this branch of the science made since the last of the Asclepiadæ.

## CHAPTER VI.

### INTERNAL THERAPEUTICS.

No new therapeutical axiom was proclaimed during this period; the edifice of the profession was still based on the foundation laid by the Hippocratists, which consisted, it is said, in employing such curative means as would be contrary in their action in the economy, to the generative cause of the disease, or to the primitive and essential lesion, to which all the other symptoms are connected. Consequently, great efforts were made to ascertain exactly, for each nosological species, its origin, its determining cause, or the phenomena which essentially constitute it. Then search was made among known remedies, for those whose physiological action was the most directly opposite to the essence of the disease. Such was, in general, the mode of reasoning, of the physicians of this epoch.

However, a famous sect called the Empirics, arrayed themselves against this method. They pretended that the immediate cause, or essential lesion of diseases being impenetrable, so is also, the primitive action of curative agents; and to establish medicine on such a foundation, was nothing more than building on the sand, or rather on chimeras. We shall recur, at a proper time, to the arguments adduced on both sides; for a very lively and interesting discussion arose on this subject, amongst the various medical sects of the Alexandrian school, and great light emanated from the midst of these discussions. But, at present, I wish only to take a practical view of the science, and in this respect, therapeutics made great acquisition during this period.

Medical natural history did not exist in the times of the Asclepiadæ; for we do not find in their writings, any methodic descriptions of substances employed in medicine, nor any effort to classify remedies. Aristotle offers the first model of a collection of the products of nature, undertaken with a scientific aim. His attention was directed particularly towards zoology, and he made in that branch of the science of natural history, discoveries which would have been sufficient to immortalize his name.

After him, Theophrastus, inheritor of his manuscripts and his museum, continued to direct the Peripatecian school, in natural studies. He did for botany, what his master had done for zoology. He observed the internal and external conformation of vegetables, their modes of nutrition, flowering and fructification; in a word, created vegetable physiology. He described the physical qualities and medicinal virtues of more than five hundred plants.

The sovereigns of Egypt made still more extensive collections, which they placed at the disposal of the savans of Alexandria; consequently, they studied the properties of a mass of new substances, with which they enriched the materia medica. Towards the end of this period, the luxury of compound preparations and exotic remedies became common at Rome, and throughout the empire, and polypharmacy was pushed to a ridiculous extent. Then were invented those famous antidotes known by the name of *mithridate*, theriaque, in which were compounded from forty to sixty different ingredients. It was supposed that each of these medicinal substances preserved its proper virtues, in the midst of the common amalgam, which possessed the properties of all the drugs that entered into its composition, and thus formed a sort of panacea, good for all diseases.

The description of a great number of morbid conditions created the necessity of a pathological classification; so, in like manner, from the multiplicity of medical substances, originated the want of a pharmaceutical classification. Three authors, towards the close of this period, Dioscorides, Pliny, and Galen, undertook to supply this vacancy. Their works on materia medica have been preserved; but that of Dioscorides is the most esteemed, for its order, clearness, and exactness; therefore I shall say a few words about it.

The author states in the preface, that he is the first who has made mention of aromatic substances, as well as remedies drawn from the mineral kingdom. He divides his treatise into six books: the first treats of odorous substances, such as oils, ointments, woods, juices, fruits, gums, and resins; the second, of animals, of honey, milk, fats, and the herbs and seeds of the gardens; the third, of roots, herbs, juices, and grains, which serve for domestic uses; the fourth, perennial herbs and roots; the fifth, of the vine, wines of all kinds, and minerals; lastly, the sixth of vegetable and animal poisons. It is plain, that such a classification of medical substances is confused and arbitrary.

The natural characters of these same substances are no better determined; sometimes, indeed, they are pointed out with so little exactness, and so few of them are mentioned, that it is impossible to recognize the plant or the mineral in question. Again, they are not indicated at all;

and, after naming a substance, he has contented himself with describing its medical virtues. The following is one of the best descriptions in the whole collection: "The nettle is of two species; in one of which, the leaves are more irregular, rougher, larger, and blacker, than in the other, and the seeds are like those of flax, but smaller. The leaves of the other species are not so rough, and the seeds are not as thick. The leaves of both, rubbed up with salt, form a good salve with which to dress the bite of dogs, gangrenous sores, chancres, open ulcers that are difficult to consolidate; also, denuded parts, small tumors, or ruptured abcess, and those which are named parotidotic. Applied with wax, it relieves the difficulties of the spleen. Rubbed up with syrup and applied to the nostrils, it restrains the flow of blood; bruised with myrrh and applied as a pessary, it provokes the menstrual flux. In touching the womb with it, fresh, it relaxes, and assumes its natural position. The seeds, drank in boiled wine, excite wanton desires. It opens the mouth of the uterus. When used sparingly with honey, it is advantageous in difficulties in the chest, pains in the side, and inflammation of the lungs. It purges the chest. It may be mingled with corrosive medicines. The leaves, stewed with some other substances, increase the urine, and relieve flatulency. Drunk with myrrh, they produce the menstrual flux. The syrup, used as a gargle, heals inflammation of the soft palate."*

The materia medica was, therefore, considerably enriched by the labors of the anatomical school; on the other hand, the diagnosis of diseases was greatly improved. The curative indications had become more precise, from which we may conclude, *à priori*, that the therapeutics of the physicians of this period became more rational and precise than that of the Asclepiadæ. The treatment of acute diseases is also described with more method and exactness, than in the authors of the Hippocratic collection. This may be seen by comparing the treatment of peripneumonia, traced by the latter, with that laid down in the work of Aretæus.

CURE FOR PERIPNEUMONIA.

"When the lung is inflamed and swollen, the affliction is acute, and promptly fatal; for suffocation is close at hand. Prompt aid must be afforded, equal to the severity of the attack. A venesection must be made at once, and from both arms, in order to effect on both sides a revulsion of humors from the lung. The bleeding must not be carried to syncope, for fear of augmenting the suffocation. When the patient commences breathing more freely, the bleeding should be stopped; to be

* Dioscorides d'Anazarbas: De la Matiere Medicale, book IV, chap. LXXIX.—French translation, by Mathiolus, Lyons, 1580.

employed again, if necessary. There is nothing, in fact, but the bleeding, that can destroy the disease, if it proceeds from the blood; and even in cases where the phlegm, froth, or any other humor of that species, distends the lungs, it would still be useful in disgorging it, and procuring a free space for respiration.

"After the bleeding, an effort should be made to direct the humor and wind by the inferior channels. To effect this, the anus should be anointed with a liniment composed of honey, rue, a terebinthenate liquid and nitre, mingled together. In a case where venesection is impracticable, on account of great effusion, an injection should be made into the fundament, in the form of clysters, of some tart substance—for example, of salt with nitre; turpentine with honey; or rue boiled in oil; or a decoction of hyssop. The pulp of colocynth, boiled in water, is also very convenient. It will also be useful to apply dry cups, along the spine, on the hypochondria, and wherever they can be used. The fleshy parts of the chest are to be preferred, from fear that the cup will fall off. If, by this means, the humors can be attracted to some other part, and the flatus that swells the lungs be dispersed, the patient will obtain great relief; but it is necessary, in some way, to besiege every part, in pneumonia.

"In the meanwhile, those remedies which can be taken with most advantage by the mouth, should not be neglected, especially as the lung, whether sound or diseased, attracts humidity. Therefore, remedies should be employed that attenuate the humors, and render them less tenacious, more mobile, and easier to be expectorated. To effect this speedily, and thus relieve the patient, a decoction of nitred hyssop should be given; or of brine, mingled with vinegar and honey; or an infusion of mustard, in an emulsion of water. If to each of these preparations there be added, freely, those of the root of the iris, and pulverized pepper, it will be found very good. So, also, these powders may be sifted, mingled with honey, and given to the patient. If he pass several days and nights without sleep, there is reason to fear that he will fall into a furious delirium. Unless the disease abates, somniferous medicines are to be used, to calm the patient, produce sleep, and prevent this unfortunate state. There is a great variety of such remedies, which may be employed; but care must be taken not to give them when the patient is on the point of suffocation by the fluxion, for fear of creating an impression in the bystanders, that your remedy has killed him.

"Aliment must be used, that acts in harmony with the remedies, and should, therefore, be somewhat bitter, sharp, attenuating, and detersive. Among the legumes, leeks, cresses, nettles, and cabbage, cooked in

vinegar, should be chosen. Among the farinaceous substances, vegetable soup, to which is added marjoram, or hyssop, spiced with a little pepper, or nitre, instead of salt, alique, boiled in sweetened water. All these substances should be boiled, in order to expel the air, which is very incommodious to peripneumonics.

"When the patients are without fever, a little wine may be allowed, provided it is not too astringent; for in this disease there is need of relaxation, rather than constriction, so that expectoration may be facilitated. In general, the patient should have but little to drink, for the lung attracts the humidity of the esophagus and stomach, which is injurious.

"The chest should be covered with wool, saturated with oil, in which a little nitre or salt has been dissolved. Fomentations should be made, occasionally, with snail oil. A useful liniment, in such cases, is composed of dry mustard, mixed with cerato. In short, everything that can draw outward the humors, heat, and wind, must be employed; such as irritant substances to the nostrils, different kinds of ointment, and ligatures on the extremities, are some of the means to be employed. If, after all these things have been employed, the disease does not abate, the case must be regarded as desperate."

The above account, except in some small particulars, would not detract from a modern work on the practice of Medicine. If placed in parallel with the prescriptions directed by the Hippocratic writers, it will be seen, that there is no comparison, whatever, to be established. Thus, in the space of four centuries, which separate the last of the Asclepiadæ from the epoch in which Aretæus lived, a greater progress in the diagnosis and treatment of certain diseases was made, than has been effected since, in a course of more than sixteen hundred years.

## CHAPTER VII.

### EXTERNAL PATHOLOGY AND THERAPEUTICS.

The want of anatomical knowledge was an insurmountable obstacle to the progress of surgery, under the Asclepiadæ. They did not lack boldness to attempt difficult and dangerous operations, but they lacked methodic and correct procedures, because the hand of the operator was not guided by a knowledge of anatomy. But after the anatomical labors of the school of Alexandria had thrown so much light on the conformation of our organs, operative medicine must have assumed a new phase;

and this we see exhibited in the works of Celsus and Galen, in which the surgical parts are incontestably superior to those of the Hippocratic books. A short analysis of the surgery of Celsus will suffice to make this evident.

This author, according to all evidence, lived toward the close of the first century of the Christian era, that is to say, a little in advance of Galen. He wrote on a great number of subjects, such as architecture, rhetoric, philosophy, military tactics, etc., but of all his works, those on Medicine alone have reached us. It forms a methodic abridgement, extremely complete and concise, of all ancient Medicine. The author, in the commencement, gives a rapid view of the origin and first development and progress of the Art, and the sects into which the medical men of his time were divided. He exercises, on each of these subjects, an excellent judgment; then he traces a regimen for men in good health, and for those who are valetudinarian. With these subjects he fills the first two books of the Compendium. The four following, are devoted to the description and cure of diseases susceptible of being cured by the aid of regimen and pharmaceutical means.

Finally, the last two books, i. e., the seventh and eighth, include the accounts of cases in which the aid of surgery is judged indispensable, with a description of the operations then in use. Celsus has contracted in a small space all the surgical knowledge of the ancients. He treats not only of all matters contained in the Hippocratic writings, but also of a multitude of others, of which these books make no mention. Among the chapters entirely new, we cite those relating to the relief of hernia, vesicular calculi, cataract, wounds of the abdomen and intestines, etc., which form, as we know, a considerable part of surgery. His arrangement of the work is sufficiently correct and natural. He commences by treating of the diseases which attack all parts of the body; then he passes to those which relate especially to each part. His work is the only one, of that distant period, in which we find the operative processes described with clearness and precision; the writings of all the distinguished surgeons, from the foundation of the Alexandrian school until his time, being entirely lost. He names, himself, several of them, such as Triphon, Evelpist, and Megès, the wisest of all.

I will not examine the question, so many times asked and still undecided, if Celsus himself was a practitioner; that is of little moment to us; but it is important for us to have a summary idea of the progress made in surgery during the course of the Anatomic Period. Now, to obtain this, it will suffice, I think, to exhibit some fragments of the latter author, in parallel with those of the Hippocratic collection, which treat of the same subjects.

ON HEMORRHAGE.

"In Hippocrates, the word αιμορραγαι always signifies a hemorrhage, in which the blood flows freely and forcibly. When less blood flows, and slower, he calls it ερρυσιν, and σταλαγμου when it flows only drop by drop. He prognosticates that, when an unnatural effusion of blood takes place in any cavity of the body whatever, it certainly becomes spoiled. It appears that he stopped the hemorrhage of wounds by filling them with a substance so as to produce compression. Sometimes, again, by the application of fire. In dressing wounds, he used a sponge rather than charpie, which was improper, because the sponge, by imbibing pus and other fluids, swells up, separates the edges, and prevents re-union."*

This is all that the author of the history of surgery has been able to collect in the Hippocratic works, concerning hemorrhage. Let us now see what the same author has extracted from the work of Celsus. "As soon as we are assured," he says, "by the signs heretofore given, that the wound may be healed, Celsus directs that attention be given to prevent the hemorrhage, or inflammation, from causing the death of the patient. Now, we know that a hemorrhage is to be dreaded, according to its seat, the extent of the wound, and the rapidity of the flow of blood. Then he directs that the wound be filled with dry charpie, and a sponge, dipped in cold water, be held upon it. If, however, the hemorrhage continues, he suggests that the charpie be frequently wet with vinegar. Some surgeons of his time poured it into the wound; but he objects to this proceeding; fearing that the sudden retention of the fluids would lead to a violent inflammation; but this could only relate to aponeurotic parts. This view led him, also, to proscribe the use of corrosives and escarotics, though proper to arrest hemorrhage. If they must be employed, he recommended that the mildest be chosen.

"If the hemorrhage resists these remedies, he advises that two ligatures be made of the vessel, at the point of injury, and the intervening portion be divided. There was only one step to take, between this and the ligatures of the vessel, in amputations; yet it required centuries to take it. If the ligature was impracticable, he proposes the actual cautery, provided the wound has bled enough, and that there are no nerves or muscles in the wounded part, as on the forehead and top of the head; parts which they believed destitute of these tissues; but this application could only afford a doubtful result. It was still the habit to apply cups to an opposite part, in order to determine the flow of blood from the wound; but it is plain that, under the circumstances, they could be of no utility.†"

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* Dujardin, Histoire de la Chirurgie, vol. I, book III, p. 210.

† Ibid., vol. I, book IV, p. 372.

There is no necessity for me to show in what respect the advice of Celsus, on this occasion, is more detailed, more methodic and rational, than that of the Hippocratic writers. I shall content myself by adding another example.

ON THE EXTRACTION OF THE DEAD FETUS.

"If we compare," says the same historian, "the cruel method employed by Hippocrates, to take away the fetus, with the practice of our time, we shall see that, in this respect, surgery has also made much progress. To extract a dead fetus, he introduced his hand, covered with cerate, into the womb, having his thumb armed with a sharp instrument, which was termed a claw. He cut off first, the arms, and withdrew them; the hand was then returned to the womb, and the abdomen of the fetus was opened, and the entrails slowly withdrawn; lastly, the ribs were broken, in order to reduce the size of the chest, so as to render the extraction easy. He gives another process, quite as terrifying. When the dead fetus is situated obliquely in the uterus, presenting an arm, he covered the head and chest of the mother, in order to prevent her seeing the operation; then he seized the arm, drew it without, and amputated it at the shoulder-joint. He next made an opening in its chest, below the clavicle, and several smaller ones in the abdomen, to allow the air to escape. An effort was now made, to get hold of the head, so as to withdraw the fetus entire. If this was unsuccessful, he crushed the head, and brought away the body piecemeal.*

"It remains, now, to detail with Celsus, how the accouchement was terminated, when the infant was presented dead. After placing the woman on her back, across the bed, the thighs were to be held apart, the indicator, greased with oil, was introduced into the uterus, and then, in the interval of the pains, the other fingers, successively, and, finally, the whole hand. There were occasions, he says, when both hands were introduced, which is not easily conceived. Celsus remarks, very properly, that when the hand is introduced into the uterus, it is at once recognized whether the infant presents the head, or the feet, or transversely. In this latter situation, the hands or the feet are not very far from the os uteri, and the practitioner should endeavor to make the head or the feet the presenting part; for it is well known, that next to the head, the feet are the more natural and advantageous presentation for delivery. This plan is a great improvement in obstetrics, since the time of Hippocrates.

"When the child presents an arm, an effort should be made to deliver

* Dujardin, Histoire de la Chirurgie. Œuvres d'Hippocrate, De la Superfétation. De l'Extraction du fetus mort. Maladies des femmes.

by the head; if it was a foot, the other should be sought. In this case, the accouchement can not be supposed difficult, even by the hand alone. When the head comes down, a very smooth and short-beaked crotchet is to be fastened in the orbit, or the mouth, or in the ear, and sometimes in the forehead, so as to hasten the delivery. Celsus says, if traction is made while the orifice of the womb is contracted, the crotchet may slip from the part to which it is fastened, fall upon the undilated orifice, excite convulsions, and place the life of the mother in the most imminent danger. Consequently, he orders, that traction be made gradually, and only at periods of relaxation, and without violence. While the operator draws upon the instrument with his right hand, the left is to be engaged in directing the crotchet, and the position of the child."

"If version can not be effected, when the fetus is in the transverse position, the crotchet must be fastened in the axilla, and traction be made gradually. As the head is carried backward, it is to be separated from the trunk, and then the separated portions are to be removed successively. To do this, a crotchet similar to the first was employed, excepting that its internal edge was sharp. The head was first withdrawn, because it was thought that if the trunk, which is the most voluminous, was first delivered, the head could not afterwards be taken away without extreme danger; nevertheless, if the operator must finish with the head, he commenced by laying on the abdomen of the woman a piece of linen, folded double; then, an intelligent and strong man must be placed at the left side of the woman, and apply both his hands to the abdomen, one placed on the other, and press the head toward the orifice of the womb, which the surgeon must seize with the crotchet, and withdraw, in the manner prescribed. Though this procedure is unnatural, it can not be denied that, in general, this manual of difficult labor, described by Celsus, is more rational and methodic than that of Hippocrates; notwithstanding the few occasions in which men were called upon to act, in the important function of maternity." *

I should have been willing to abridge these quotations, and many others that are passed, as well as those that are to come; but after deliberate reflection, I have concluded to present the thoughts of authors in their own style, rather than abridge them by incomplete quotations; or alter them by analysis; I employ this last means, only when I can not do otherwise. It has appeared to me, that one of the principa objects of the history being to offer the reader a succinct narration, as exact as possible, of the vicissitudes of medical science, it would be better to furnish him, often, with the means of judging for himself, by

* Histoire de la Chirurgie, T. I, liv. IV, p. 496. Celse, liv. VII, chap. XXIX.

placing before him, in some sort, the various documents on the subject, than to present him a ready formed opinion. The advantages of this method seem to me so clear, that I do not think it necessary to argue it at length.

## CHAPTER VIII.

### CLINICS.

Clinics, as before remarked, is not a particular branch of medical science; it is the science itself, in its practical application; it is the battle-field of the physician; the theater where he displays not only all the resources of his art, but, also, of his genius, as well as the qualities of his soul. A high intellectual capacity is doubtless the first condition that constitutes the great practitioner; but this is not sufficient; there are, also, necessary, constant watchfulness, and presence of mind, which will enable him to seize passing indications; firmness of character, that prevents him being troubled under the most painful circumstances, and which gives him courage to take a resolution, without being disturbed by unjust and calumnious conversation — fearlessly risking his reputation for the salvation of his patients.

A great practitioner must show himself, in all his acts, a constant advocate of truth. He must not palliate his reverses, or his faults, nor exagerate his success, for he is not ignorant that both serve as lessons; and that, in his elevated position, to hide the truth, or speak falsely, is to pave the way for future homicides.

Such are the qualities that shine in the clinical histories unanimously attributed to Hippocrates, in the first and third books on Epidemics. In no other part of his writings are they so conspicuous as in these books. The anatomic period, during which the Art made such great progress, has not transmitted to us any collection of clinical observations worthy to be compared with these; whether the works of the illustrious practitioners of this period perished in the destruction of the great libraries, or whether, during this long period, there did not exist any man who united in himself, in so eminent a degree as the old man of Cos, all the qualities which constitute the great practitioner, I do not pretend to say. Galen, who alone, among the physicians of this period, can sustain advantageously a comparison with Hippocrates, by the general character of his acquirements, and the multitude of his writings, has left us no collection of clinical observations. He reports, now and then, the history of some diseases, but for the evident purpose of showing

the superiority of his diagnosis, and the excellency of his theory. We do not see in his recitals, as in Hippocrates' lively pictures of epidemical constitutions, the naivé and impartial historian, who gives his facts without comment; but we everywhere find, on the contrary, the prolix and subtle dialectician, who lets no phenomenon escape him, without interpreting and discussing it, in a lengthy manner.

### APHORISMS.

Many writers of this period, and Galen among the rest, commented upon the Hippocratic aphorisms, but no one attempted to construct new ones. The greater part were doubtless maintained, from the respect which was held for the ancient oracles, whose reputation was colossal; it may be, too, they feared the abuse to which this kind of literature in Medicine, more pretentious than solid, would lead. Be this as it may, we shall not reproach the authors in this period, for having abandoned them.

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## CHAPTER IX.

### THEORIES AND SYSTEMS.*

### GENERAL CONSIDERATIONS.

In proportion as the physical science of man was cleared up by the researches in experimental anatomy and physiology, or, the diagnosis of

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* The words *theory*, *system*, and *doctrine*, have been many times already placed before the eyes of my readers; nevertheless, there is nothing more vague than the various acceptations that authors attach to them—especially the first two. If, to clear up this uncertainty, we have recourse to the most modern and best esteemed lexicons, we find nothing in them satisfactory. No one gives a rational explanation of the synonymy of these terms, and the shades of difference between them. (*a*) Some of the more recent writers have attempted to introduce the following distinction: "A theory," say they, "is the production of a genius who sees nature as it is; a system is a product of the imagination, which bends every thing in nature to its taste." But it is evident that such a definition rests on an uncertain and arbitrary base; for each author and his partisans being inclined to consider their opinions the only true ones, will attribute to those of their adversaries such qualifications as give them an erroneous character, as is clearly shown by M. Raige-Delorme, in the Dictionary of Medicine, in 21 volumes, at the word *Doctrine*.

M. Bouillaud complains very bitterly of the want of accuracy and precision in philosophical terminology, and more especially of the ambiguity of the words

(*a*) Consult, on this subject, Dictionaire de l'Academie.—Dictionaire de Laveaux.—Dictionaire de M. Napoleon Landais.—Dictionaire des Sciences Medicales, in 60 volumes.—Dictionaire des Synonymes, by Boinvilliers.

diseases became more perfect, as the conquests in natural history multiplied the resources of therapeutics, it became more and more necessary to classify the material acquisitions of science, in a methodical order, that could be recalled easily by the memory; and to unite by a theory, more or less reasonable, the multitude of old and new facts, that made up the treasure of Medicine.

A great number of philosophic writers, holding different views, attempted this difficult enterprise; some, in fact, endeavored to unite the traditions of the past with the conquests of the present, without changing at all the fundamental principles of the accredited doctrine, and by the aid only of a few modifications of details. Others, on the contrary, judging these principles to be erroneous or insufficient, aspired to nothing less than the overthrow of the ancient edifice of science, in order to reconstruct it on new foundations.

If the historian should attempt to record the particular opinions emitted, on each of the phenomena of the animal economy, he would find nearly as many different theories as there exist authors in Medicine; for there is not a single physician who has not modified, in some point, by his own experience, the doctrine which he has received from his masters. But if regard be had only to the capital differences—to the divergence in principles—the theories which most divided physicians of this period may be ranged under four heads, namely: Dogmatism, Empiricism, Methodism, and Eclecticism or Syncretism.

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theory, system, doctrine, etc.; but he has not remedied it.(*b*) M. Coutanceau is the only one in my knowledge, who has given a clear and logical definition of the theory and system. A theory, he says, indicates the relation of facts among themselves; it marks their order of succession and dependence. A system (in medicine) is a general theory of the laws and mechanism of life, by means of which we endeavor to reduce to a small number of principles, sometimes even, to one alone, all the phenomena of health and disease.(*c*)

Though M. Coutanceau has limited to medicine his definition of system, whilst his definition of theory is applicable to all sciences, he has nevertheless appreciated and expressed, more happily than any other writer, the shade of difference between the two expressions, and the similitude which unites them, in saying that a system is a general theory. Such is the sense which we have ourselves attached to these words, when we would make a distinction; thus we say, the theory of inflammation and of fever; the system of Hippocrates, of Themison and Stahl. Lastly, the word doctrine has a still more extended signification; for it signifies all that one believes or teaches, on any matter whatever. It embraces, in its scope, theoretical and practical notions, systems, facts, and hypotheses; it is what must be understood by the following expressions, which recur so often in medical language: the doctrine of Cos, of Montpelier, of Leyden, etc.

(*b*) See his Essai de Philosophie Medicale, Paris, 1836, page 176, note.

(*c*) See Dict. Med., in 21 vols., words Theory, System.

### ART. I. ON DOGMATISM.

We know, already, the principles of Dogmatism, its origin, its authors, and its most illustrious partisans. We know that this doctrine, taught in the school of Cos, and sustained by Plato and Aristotle, had reigned in the medical world for several centuries before the school of Alexandria was established. The earliest, and the most celebrated professors of that school, brought up in the tenets of Dogmatism, made few changes in it. Herophilus admitted the sentiments of Hippocrates, and Praxagoras, his master, on the effect of the mingling of humors, in health or disease, and followed nearly their rules in the practice. Besides great discoveries in anatomy, he made many experiments with medicines, which he termed the hands of the gods when properly employed, but useless, and even injurious instruments, if a practitioner is ignorant of their appropriate use.*

Erasistratus, though adopting the greater part of the Hippocratic dogmas, thought that fever and inflammation proceeded from the passage of the blood from the veins to the arteries. According to him, these last vessels contained, naturally, only air, or spirits; "but," said he, "when there is an excess in the veins, extravasation takes place, into the arteries, and creates all the inflammatory and febrile symptoms." The sanguineous plethora appeared to him to be the most frequent cause of diseases; nevertheless, to combat it, he rarely employed bleeding.

He preferred abstinence or fasting, dieting, mild injections, vomits, exercise, and baths. He was not very partial to purgatives, and did not believe, with Hippocrates, that certain of these remedies had the property of eradicating some particular humor, exclusively. He said, that the thinnest, and most subtile humors, were first carried off; then the more tenacious followed. According to him, the mildest purgatives produce only slight, watery evacuations; those which are a little stronger, carry off the bile; and the strongest of all, the atrabile.

But of all the sectators of Dogmatism, the most fruitful, the most skillful, and the most powerful, was Claudius Galen. He was a native of Pergamos, a city of Asia-Minor, celebrated for its temple dedicated to Esculapius, its school of Medicine, and its library — which in richness was only second to that of Alexandria. His father was his first master, who placed him, also, under professors very distinguished in all the sciences. The young Galen profited by their instructions, with extraordinary success. He was already in a state to dispute with the most erudite, on grammar, history, mathematics, and philosophy, when,

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* Galen, De Compos. Medicam. local., lib. VI, cap. III, (Luler, p. 322.)

on the express advice of the gods, he decided to study Medicine. He recounts with complacency, how this counsel was twice given to him in a dream, by Apollo, and that he could not resist the divine will, so clearly manifested. But his numerous and learned writings justify much better his medical vocation, than all these mysterious reminiscences.

He undertook several voyages, for instruction, and visited, among other cities, the capital of Egypt, where he remained some time. On his return to his country, he was charged by the Pontiff, to dress the wounded in the circus, which furnished him an opportunity to display his anatomical knowledge and surgical skill. Very soon afterward he left again his native city, to go and exhibit himself in a much grander theater. He went to Rome, preceded by his great renown, and where his easy and brilliant elocution, his profound and varied erudition, and practical skill, secured him the esteem of the highest personages; but his rapid success, his boasting, his disdain for his confreres, which he took no pains to disguise, and his natural jealousy, raised up against him a crowd of enemies, who rendered his stay at Rome very disagreeable. A conception of this may be had, by the following picture, which he draws of the physicians of that capital, in his work on Prenotions * He accuses them of base jealousy, and stupid ignorance, and pours out upon them such epithets as thieves, and poisoners, and closes by saying, that after having unmasked them, he would shield himself from their hidden and evil designs, by abandoning the great and populous city—where a man has consideration only in proportion to the luxury he displays; where a shameless charlatanism usurps the confidence of a stupid and frivolous public — to seek a home in some smaller city, where the citizens are mutually acquainted, and therefore know the birth, education, fortune, and private life of each other.

He left Rome, but very soon returned, on the invitation of the emperors Marcus Aurelius and Lucius Verus. He had also the confidence of their successors, Commodus and Septimus Severus. It is supposed that he died in the seventy-first year of his age, toward the close of the second century of the Christian era, either at Rome or Pergamos, or on the passage from one city to the other. A monk has imagined that he finished his days during a pilgrimage to the Holy Land.

Galen asserts, that he was not attached to any of the sects that divided the physicians of his time. He treats as slaves those who took the title of Hippocratists, Praxagoreans, Herophilians, etc.; but he is not to be credited, when he affects to hold an equal balance among the

* De Prœnotione ad Posthumum, edition of Chartier, Tom. VIII, page 836.

various doctrines. It is probably only an absence of mind, very pardonable in a man who has written so much; or an oratorical artifice, to show an air of independence and impartiality. His predilection in favor of the doctrine of Hippocrates is well marked: he explains, comments upon, and amplifies it at length; he refutes the objections of its adversaries, and strives to give it the ascendancy over all others. "No one," he says, "before me, has given the true method of treating diseases. Hippocrates, I confess, has heretofore shown the path, but as he was the first to enter it, he was not able to go as far as he wished. The order he adopted is bad; he omits certain important indications, and has not made all the distinctions necessary. Often, he is obscure, as is usually the case with the ancients, when they attempt to be concise. He says but very little of complicated diseases; in a word, he has only sketched what another was to complete; he has opened the path, but has left it for a successor to enlarge and make it plain."*

This short quotation shows the point assumed by Galen, and how slightly he regards the labors of the physicians, who lived between Hippocrates and himself. Let us now see how he has acquitted himself of the task he so arrogantly undertakes.

There are, according to him, three sorts of principles in man, viz., spirits, humors, and solids, which he also named parts.

Among the solids, some are simple, or similar; that is to say, if they are divided, each fraction is homogeneous with the rest. Such are the bones, flesh, nerves, membranes, etc. These structures have, in vain, been divided into as many fractions as were desired, but there always remain in each, pieces of bone, flesh, or membrane, similar to the entire bone, flesh, or membrane, that has been broken up. Other parts are called organic, or compound, as the arm, leg, head, or eye; because they execute the most striking and perfect acts, and because they are formed of several similar parts.

There are some simple parts that take their origin from the semen; such as nerves, membranes, bones, and veins. These are not very susceptible to corruption, and are not regenerated after they have been destroyed, There are other simple parts which degenerate easily, and are reproduced with the same facility. They are those that come from the blood, as the fleshes.†

Galen refutes, with Hippocrates, and by the same arguments, the opinion of those philosophers who recognize but one element; neither does he share the advice of those who, in admitting several elements,

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* Method Medendi. lib. IX, chap. VIII.

† De Constitutione Artis Medicæ. Also, De semine.

regard the corpuscles as incommunicable in their essence. When the tissues are divided, he says, both pain and heat are excited; now, both of these results would not transpire if they were composed of one element alone, or if the elements that enter into their constitution were unalterable. Nothing more would be realized, in such a case, than when one finger is separated from another, which excites not the slightest pain or heat. In consequence of this reasoning, Galen ranges himself on the side of Hippocrates and Aristotle, who admitted, as we know, four elements or primordial qualities, heat, cold, dryness, and moisture. He thought that all the changes which occur in the body are due to one of these elements; but he regards heat as the most active of all, and cold next to it. The natural bodies, he says, in which the primitive qualities show themselves in the highest degree, are fire, air, earth, and water. These are called elementary, because the others are derived from them.*

We perceive, therefore, that Galen reproduces and amplifies the Hippocratic Dogmatism. What follows is a continuation of the same subject; but the reader who is *au fait* in the doctrine of Cos, will discern, without my pointing them out, expressly, the additions and pretended improvements which the physician of Pergamos makes to this doctrine. I proceed, then, without interruption to exhibit the system of Galen.

There exists between the elementary or similar parts of the human body, four simple variations: that is to say, one part may be hotter than the other, or colder, or dryer, or moister. There exists, also, or may exist, between these same parts, four compound variations, namely, one may have more heat and dryness than another, or more heat and moisture, etc. The exact proportion and mixture of these qualities produce the best constitution, or perfect health. But this perfection is rather an ideal type than a reality; the most healthy men are always a little removed from it.

Between perfect health and disease there are, according to Galen, eight kinds of temperaments or imperfect mixtures, compatible with the free exercise of the functions of life. Four of these elements are simple, and four compound. If a man has in every part of his body, or in some one part, an excess of heat, it may be said that his temperament is simply hot; or if the excess be in moisture, his temperament is humid, and so on for the rest. But if there exist an excess of heat and moisture at the same time, in the body of an individual, or in any portion of his system, then that individual would have a hot and moist or

* De Constitutione Artis Medicæ — Introductio sen Medicus — De Elementis ex Hippocrate.

a compound temperament. Disease, says Galen, is not a temperament, but an intemperament.*

After this somewhat subtle and arbitrary classification of temperaments, Galen designates the signs that characterize each of them. Here, for example, are those that indicate a cold brain: the natural emunctories of this viscus, viz., the palate, ears, nose, and eyes pour out excretions too freely. The hair is straight, red, rather stiff, thin, and poorly nourished; it grows slowly. Persons in this condition are very sensible to refrigerant influences, and very subject to catarrhs and heaviness of the head. The skin about the cranium is neither hot nor flushed. The veins of the eyes are scarcely visible: in short, these persons have a remarkable propensity to sleep.† Our physiologist passes in review in this manner all the principal organs of the human body, and describes the signs of their various temperaments.

Then he describes the temperaments of the natural humors of the body, and those of certain substances foreign to the animal economy. In these descriptions we still see, as in all that precedes them, the evident traces of the Hippocratic Dogmatism. Thus, according to the opinions of the physician of Pergamos, the blood, air, and the spring season are hot and humid; the yellow bile, summer, and fire are hot and dry; the earth and autumn are dry and cold; the phlegm, water, and winter are cold and wet. It is indispensable that the humors of the body be reciprocally transmutable—just as are all the primitive elements; for, though they exist in all parts mingled together, and mutually temper each other, there is nevertheless an organ, a period of life, and a season in which some one of them more particularly abounds. The blood, for instance, predominates in the heart among the adolescent and in the spring; the yellow bile in the liver, in middle life and in summer.‡

Beside the structures and humors, there is, also, in the animal economy, a third principle, which is called spirits. These spirits are of three kinds, namely, natural spirits, which Galen compares to a subtile vapor that arises from the venous blood. They originate in the liver, which is also the source of the blood; thence they proceed to the heart, where they mix with the air which that viscus attracts from the lungs, and unite with it to form the vital spirits. These last are thrust by

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* De Constitutione Artis Medicæ, chap. IX; Ars Medica, cap. IV; De Temperamentis, lib. I, chap. VIII; De Optima Nostri Corporis Constitutione; De Sanita Tuenda.

† Ars Medica, cap. VIII; De Temperamentis, lib. I, II, III.

‡ De Humoribus Introductis seu Medicus, cap. XII; De Placitis Hippocratis et Platonis.

the arteries into all parts of the system, but chiefly into the brain, where they are converted into animal spirits.

The spirits are the instruments or servants of the soul, which governs the animal economy.

Galen thought, with Plato and Aristotle, that the human soul is composed of three faculties, or, rather, of three parts: the vegetative, which resides in the liver; the irascible, which has its seat in the heart; and the rational, which dwells in the brain.*

Each faculty of the soul has in its service, according to Galen, independently of the spirits, a certain number of secondary faculties. Thus, the vegetative soul held in its department, the generative, growing, and nutritive faculties. These secondary faculties, in their turn, fulfilled their functions, aided by faculties of a third order. The nutritive, for example, which has its principal locality in the stomach, is assisted by attractive, retentive, assimilative, and expulsive faculties.†

Aided by this hierarchy of souls, spirits, and faculties, Galen and his sectators had no difficulty in giving an account of all the functions of the animal economy. If the question was asked of one of them, how nutrition is performed, the answer was: nutrition is a natural function, to which four faculties concur, namely: the attractive, which draws the food; the retentive, which keeps it for a sufficient time, for coction to take place; the assimilative, which transforms it into particles analogous to the substance of our bodies; the expulsive, which eliminates their excrementitial residuums. When, I say, the candidate had made this response, professors and assistants must show themselves equally satisfied, for he had explained, according to the language of the times, what was supposed to constitute the essence of the nutritive function.

Pathology offers us the same assemblage of imaginary or abstract entities, to which attributes were ascribed, as to real beings. We find accounts of diseases that had their seats in the solids, humors, and spirits.

Diseases of the solids were divided into three orders: the first comprises affections of similar parts, and also named distempers. There are two species of distempers, namely: the simple distemper, which proceeds from the excess of a single element, whether heat, cold, dryness, or moisture; the double, or complex distemper, which results from an excess of two of these elements at the same time, as an excess of heat and dryness, or an excess of heat and moisture, etc. The second order comprises affections of organic parts, which consist in irregularities of

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* De Facultatibus Naturalibus, lib. I., II., III.

† De Facultatibus Naturalibus.

conformation, errors in number, size, or situation. Finally, the third order, which is common to similar parts, and organic parts. It includes all the accidents connected with the solution of continuity. Galen distinguishes, also, among the diseases of the solids, various complications, which constitute so many new species.*

The essence of fever consists in an unnatural heat, which sometimes is kindled in the tissue, even, of the heart; again, in the humors of this viscus; and, lastly, occasionally in the spirits. The latter are most promptly inflamed; next, the humors; lastly, the solids. Fevers of the shortest duration have their seat in the first; those of medium duration, in the second; and those that are longest continued, in the parenchyma.†

Ardent fevers degenerate into the hectic, or consumptive, in two ways; first, when they are prolonged to such an extent as to consume all the humidity of the heart, and then seize upon the tissue, even, of the organ; second, when they invade the substance of the heart, before all its humidity is consumed. Hectic fevers are recognized by the temperature of the body of the arteries, which is more elevated than the contiguous parts. This difference is especially marked, at the moment of the diastole of the artery.‡

Among the fevers which proceed from the humors, Galen distinguishes three orders, viz: the continent, continued, and intermittent. Each of these orders he divided into many species. Of intermittent fevers, the most common are the quotidian, the tertian, and the quartan. The first is produced by the phlegm; the second, by the yellow bile; the third, by the atrabile. Galen admits, besides these, many other species of fevers, both simple and compound.

In regard to the progress of these febrile affections, our pathologist recognizes, with Hippocrates, four periods, which he names invasion, augmentation, stasis, and decline. He compares these periods to the four ages of man, in the following order: the first age, or that of generation; the second, or that of growth; the third, or that of force and vigor; the fourth, or age of decline. When the patient succumbs, it is always in one of the first three phases; never in the last.‖

In other respects, in regard to coction, crises, and critical days, our author concurs in the pure doctrines of Cos.

He divides the action of remedies into primitive, and consecutive. The primitive action depends on one or two qualities, which exist in the

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* De Morborum Differentiis liber.—De Morborum Causis, liber.

† De Differentiis Februm, lib. I, cap. I.

‡ De Differentiis Februm, lib I, cap. X., XIII.

‖ De Morborum Temporibus, etc., lib. II.

medicine. Thus, one substance will excite heat or warmth, because the element of fire predominates in it; another is cooling, because it has the cold element in excess. There are also substances that produce heat and dryness at the same time; others which excite heat and moisture. Among therapeutic agents endowed with the same property, for example, that of heating, some have it in an eminent, and others in an inferior degree. Thus, bitter substances are extremely heating; the sweet are only moderately so, their heat but little surpassing ours. The saline taste proceeds from the excess of the igneous and terrestrial principle.*

There are substances which produce their effects immediately; for example, fire heats at once; and ice cools in like manner. The effect of others is not so prompt, such as the anthemis pyrethrum and castor, which produce a sensation of heat only after some time has elapsed; and hyosciamus and mandragore cool, also, slowly. A thing may be said to possess a quality, naturally, or accidentally, accordingly as it is a natural or accessory attribute. Water, for example, which is naturally cold, may become hot, accidentally, but its acquired heat is not long retained, while its natural coldness persists, habitually. After other distinctions, still more subtile, on the various ways in which we may observe the primitive effects of medicaments, Galen traces the rules to be followed in order to recognize their effects; he indicates the precautions to be observed, so as not to be deceived by false appearances. Passing then from precept to example, he demonstrates by a series of experiments and arguments, that water has a cold and humid temperament; vinegar a cold temperament, with a certain mixture of heat proceeding from its acridness.†

The consecutive action of medicines is so called, because it is manifest after the primitive effect, and as a consequence of it. This action is very varied; thus, there are medicines that open the pores, others which close them; some harden, others soften the tissues; some purge the humors, others alter them; some hasten their maturation and the formation of pus; others give relief to pain, etc. There are, also, remedies whose consecutive action is especially related to certain organs, or certain functions; such as diuretics, vomits, drastics, emmenagogues, etc. Galen sought to establish the connection which exists between the primitive and secondary action of remedies; for example, he supposed, that remedies which harden the tissues, are of a cold and moist temperament; those which increase the flow of urine, are hot and dry; and those that increase the secretion of milk and semen, are moderately hot and humid.‡

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* De Simplicium Medicamentorum, Temperamentis Facultatibus, lib. I, II, III, IV.

† Ibid., lib. I, II, III, IV.

‡ Ibid., lib. V.

As to the principles which should guide the practitioner in the choice of therapeutic means applicable to each disease, the physician of Pergamos adopted fully the axiom proclaimed by the school of Cos, which says, that diseases are cured by their contraries. Consequently, all researches and pathological dissertations aimed to penetrate the essence of diseases, to make it evident, and distinct from all accessory accidents; in short to apply to this essence a treatment whose action would be diametrically opposite to its mode of existence. Now, he considered this essence to be, sometimes, the excess of one or two elementary qualities of the diseased part; again, the re-action of the vital principle, the efficient and primary cause of all the symptoms. In this respect his doctrine is confounded with the Dogmatists; it is nothing else than Dogmatism itself, amplified, explained, and pushed to its last consequences. Occasionally, however, he had regard to the constriction and relaxation of the pores, which approaches the views of the Methodists. Finally, he professes, in many passages, a great consideration for the pure concourse of symptoms and experience; fundamental principles, which the Empirists placed above every thing. Notwithstanding these rare and slight digressions, Galen has been, and must be regarded as one of the pillars of the Hippocratic Dogmatism.

Though he has written a great number of treatises on pathology and therapeutics, it would be difficult, if not to say impossible, to treat a single disease by his directions, so bad is the method he has adopted, and so defective was his manner of studying each case. I except, always, from this proscription, the last four books of the treatise on Local Affections (*de Locis Affectis*), where he gives excellent counsel how to ascertain the anatomical seat of diseases, particularly of a mental and nervous character. This treatise, joined to his writings on anatomy and physiology, of which notice has already been taken, constitute for the physician of Pergamos imperishable titles of glory, and justify and excuse the infatuation of which he was the object during more than twelve centuries.

In an historical sense, this encyclopedic writer has rendered immense services; for he has preserved the opinions of a great number of physicians whose writings have perished, and especially of the chiefs of the sects. Thanks to him, we are able to raise a corner of the veil that covers the great contests between the Dogmatists, Empirics, and Methodists. If the numerous works he has published are not now a treasure, easy for the practitioner to explore, they are an arsenal from which the erudite, and the dialectician, may draw arguments, on all kinds of medical questions. Now, we approach an epoch in which physicians showed themselves more anxious to shine by the subtilties of dialectics,

and the glitter of a vain erudition, than by the wisdom of their practice; so much so, that the defects, even of this author, shall contribute yet, to maintain in his hands the scepter of Medicine; because, for erudition, subtility of reasoning, and universal knowledge, he was second only to Aristotle, and excelled even him, in elegance, purity, and strength of style.*

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### ART. II. ON EMPIRICISM.

The epoch in which the school at Alexandria was founded, was, as we have seen, one of the most brilliant in the history of the human mind. The love of letters, art, and philosophy, generally diffused throughout Greece, had endowed her with *chefs d'œuvre* of every kind. The companions of Alexander had carried the lights of her young and vigorous civilization to the center of Asia, the first cradle of a decrepid civilization. In short, the radiant and communicative science of the Greeks, eclipsed, on the shores of the Nile, the pale and shadowy rays of antique Egyptian wisdom. While the successors of Plato and Aristotle continued to teach the doctrines of their great masters, other philosophers elevated rival schools, and strove to propagate diverse views. Epicurus revived and embellished the system of Leucippus and Democritus, on atoms, vacuum, and perpetual motion. Pyrrho developed the maxims of Parmenides and Zeno, on the uncertainty of our knowledge and judgment. He founded the sect of Skeptics, or Zatetics, who have been styled the indifferent, in matters of science, as the Epicurians were indifferent in matters of morals. On the other hand, Euclid invented the useless art of embroiling all questions, and silencing his antagonists, by captious and odd arguments. His sect, which was named *contentious*, sought victories only in public debates, at that time very much in fashion; and they put in vogue a prating and cavilling dialectic, which gradually infected the other schools.

Medicine, as usual, followed in the track of philosophy, and was divided into several opposing camps. Herophilus and Erasistratus, though dissenting from some of the points of the Hippocratic doctrine, respected it as a whole; but their disciples, Philinus of Cos, Serapio of Alexandria, and others, did not maintain the same veneration for it; they attacked even the principles of that doctrine, and asserted that all which it affirms touching the elements, and elementary qualities, cardinal humors, coction, crisis and critical days, the occult, or

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* It is said that he composed more than five hundred volumes on Medicine, and nearly half that number on other subjects. But it must be observed, that among these volumes there are counted many little manuscripts of a few pages only.

proximate causes, and the essence of disease, was altogether false, or hypothetical. They rejected, as doubtful, hazardous, and useless, the famous therapeutic axiom that forms the basis of Dogmatism, (diseases must be cured by their contraries) and dared to reconstruct the Art on new foundations.

This medical reform, or rather revolution, made rapid progress, and the names of a number of physicians of high standing, are cited as supporting it; but the most celebrated, after the two coryphei, whom we have named, was Heraclidus of Tarentum, who lived cotemporary with them, or a few years later. The Methodist, Cœlius Aurelianus, who, following the expression of the historian, Daniel Leclerc, was accustomed to maltreat the physicians of other sects, speaks of Heraclidus, only in most honorable terms, giving him the epithets of noble and famous; calling him the last, and the most estimable of the Empirics.* Galen's opinion in relation to him is nearly the same: "Heraclidus never speaks contrary to truth to defend the interests of his sect—he announces only his own experience; and he practiced Medicine as well as any other physician of the time.†

The Empirics composed a great number of books, which are lost. It is only from the reports of writers of other sects, that we are acquainted with their doctrines. It is probable, therefore, that they have not been exhibited in the most favorable light. The Empirics go back to the infancy of the Art; they recount how the first sick were treated, and they deduce from this the rules for the perfection of medical science.

The following argument of theirs is copied from Celsus: "Among the sick, who, in the commencement, were without physicians, some, tormented by hunger, could eat from the first days of their illness; others, on the contrary, disgusted with food, could eat nothing, and recovered much sooner than the former. Again, some ate, even during a fever; others, a little in advance of its accession; others again, after it had ceased; and these did better than the first or second. Also, those who had eaten largely at the beginning of their disease, were in a much more dangerous condition than those who had eaten but little. As these things occurred every day, attentive persons soon observed what was best suited to the sick, and thereafter prescribed it. Thus medicine originated, which, from the essays that have been made, sometimes to the advantage, and again to the detriment, of the sick, has been the means of establishing a judgment between what was good, and what

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* Acutorum, lib. I, cap. XVII. Ibid., lib. II, cap. IX.

† Galen, in lib. Hippocr. des Articul. Comment. 3. Ibid., De Composit. Medical., per genera, lib. IV, cap. VII.

was evil. It was only then, after men had found remedies, that they commenced to reason on the manner of employing them."* If, now, we compare this passage with those taken from the work on Ancient Medicine, it will be seen that, between them, there is perfect conformity; but I shall have occasion, hereafter, to show other analogies between the doctrines of the Hippocratic works and the system of the Empirics.

They ranged under three heads the method of acquisition adapted to Medicine: first was personal observation on autopsy; second, the study of the observations collected by others—or history; third, the inductions drawn from autopsy and history, which would serve to discover things, for the moment concealed, but which had been before observed. The last method was termed epilogism, or, in other words, consecutive reasoning, to indicate that it was deduced from anterior observations; at other times, it was called analogism, because it rested on a similarity of features. These three sources of medical instruction: autopsy, history and epilogism, formed the base, or what was termed the tripod of Empiricism.

AUTOPSY.

The Empirics realized fully the maxim of Hippocrates, "*experience is deceptive;*" for they took the most minute precaution, to avoid the causes of error to which this mode of acquisition is subject; though it is the first of all, and the true foundation of the Art. They thought, for example, that a disease should be studied a great number of times, from its accession to its end; in a simple, and in a complicate state; in individuals of different temperaments, ages, and sexes; and the knowledge attained, of what conditions favored or prevented its development, etc., before any one could pretend to have made its autopsy. They thought, also, that the same treatment should have been employed a great number of times, in the same disease, and under different circumstances, before it could be affirmed that it would be efficacious in similar cases.

They did not confound symptoms with the disease; they called a symptom an isolated phenomenon, or separate consideration, for example: pain, swelling, redness, cough, and difficult respiration. They gave the name disease to an assemblage of morbid phenomena, or, in other terms, to a concourse of pathological occurrences, which were not fortuitous, but which were nearly always developed in the same form.

Though they banished from their pathology the research of what the Dogmatists named essential, or consecutive phenomena, they believed, nevertheless, that all the symptoms were not of equal value. They estimated the importance of a pathological phenomenon, not on its

* Celsus, Trad. de Ninnin, liv. I, chap I.

pretended essence, which nothing, they said, revealed, but on the manifest or sensible circumstances, which every one could appreciate. Thus, a symptom that persisted throughout a disease, appeared to them to merit more attention than one whose duration was much shorter. A symptom related to the functions of an organ essential to life, or which announced a grave alteration of an essential organ, was, in their eyes, more serious than one which involved a secondary function, or indicated a superficial derangement.

But, however grave a symptom, they were not willing to accord to it an exclusive consideration; they directed their attention to the general state of the patient, or the concourse of symptoms. Thus, while some physicians attached an exaggerated importance to the character of the pulse, urine, or other dejections, or to the state of the skin, etc., for the diagnosis of certain diseases, they asserted that, as far as possible, no circumstance should be neglected, and an exploration be made, in every case, not only of the organ or function specially affected, but also of all the functions and organs, or at least the principal ones. They taught, also, that an observation should be made of the accession and disappearance of the different symptoms, their order, course, and, in short, of all their relations to age, sex, habit, complexion, climate, season, etc.

An individual who had observed, frequently, the same disease from its origin to its close, and who preserved a faithful memory of its symptoms, course, and most ordinary complications, and the means to combat them, possessed a *theorem*. Any one, then, who had thus stored in his memory a considerable number of theorems, possessed experience or practical skill. Thus, autopsy, or clinical observation often repeated, established a theorem, and the reunion of a number of theorems constituted experience.

An Empirical theorem, then, was nothing else than an exact tableau of all the known phenomena of a disease, arranged according to their importance and accustomed order, with the specification of their varieties, and of the appropriate treatment, either separately or conjointly considered. Each theorem, or each morbid concourse, in Empiricism, was designated by a particular name, which was the symbol or abridged expression of all the phenomena which made up the theorem. This name was derived, sometimes, from the part principally affected; thus, the word pneumonia designated a concourse of symptoms, whose principal seat was the lung; gastritis, a collection of symptoms, relating principally to the stomach; thus avoiding all prejudice as to the nature of the symptoms, and the cause of the disease. Sometimes, the name of the theorem, or morbid assemblage, was derived from a dominant symptom, as icterus, mania; again, from the resemblance to a foreign object, as cancer, elephantiasis, etc.

The Empirics, we thus observe, attached but a secondary importance to the name of a disease, for that did not indicate to them its essence, but only an assemblage of morbid symptoms. The essential matter, with them, was, that each concourse be traced with great exactness, following, at first, its habitual march, then its irregularities and complications.

### HISTORY.

If it were necessary for a man to have seen, with his own eyes, most diseases, with all their varieties and almost infinite shades of difference, and to have directed the remedies employed in each case, and to keep faithfully in his mind, or in his note book, the account of all these matters, he must have reached a very advanced age before commencing the practice of Medicine. Few men could have been found, endowed with patience, sagacity, and memory sufficient to finish so long and complicated an undertaking. Moreover, the experience of preceding generations, and that of our cotemporaries, would be almost lost to us. The scientific edifice of Medicine, in place of being extended and perfected from age to age, would have remained stationary, or made but little progress. To supply the insufficiency of autopsy, the Empirics had recourse to history, that is to say, to clinical relations and theorems, committed to writing. By the aid of history, we participate in the experience of all other men; we correct our own observations; we are able, in a word, in a few years, to acquire more knowledge and practical skill than if we had passed all our lives in collecting notes at the bedside.

But to be able to appreciate the value of this source of instruction, we must know *how* to make a judicious use of it, and besides, must only confide in such histories as present sufficient characteristics of truth, some of which we will mention. 1. The reputation of an author is an essential thing to consider. Faith is much more readily given to the recitals of a man like Hippocrates, who has the reputation of an attentive observer and truthful writer, to whatever sect he may belong, than to the narration of one like Andrews, who has the character of being an inexact observer and an insincere writer. 2. When several histories, of different epochs and countries, recount the same fact, with analogous circumstances, it is a powerful motive to confidence. 3. A still surer guarantee of the correctness of a history is, that it accords with our own observations. It is necessary, then, before receiving the statements of a writer, to submit his narration to a critical and severe examination, and to accept it only in proportion to the degree of certainty it presents. Thus illuminated, history becomes a sure guide, and an extremely useful repertory for a practitioner.

EPILOGISM OR ANALOGISM.

It may happen, that a new disease is presented to the practitioner, which has not before been described. In that case, neither autopsy nor history can offer examples as a guide. It may happen, also, that in treating a well-known affection, the ordinary remedies indicated are not at our disposal; here, again, history and autopsy do not aid us. In both these cases, one is obliged to have recourse to reason, and be guided by analogy. For example, a physician has a case not before seen, nor described by authors. Search, say the Empirics, among the historical relations, or in your own experience, what there is that approaches nearest to the present disease, then treat it with those remedies which have succeeded with the former. Thus, the treatment which has been employed successfully in erysipelas, may be tried in certain skin affections which strongly resemble that disease. So, also, a remedy which had cured a rheumatism of the leg, would very probably cure it in the arm. If it is desirable to replace a remedy whose efficacy is known, but which is not to be had, by an equivalent remedy, seek, say they, among the medicines at your disposal, that which is most similar to the one you lack. Thus, you may substitute the juice of the persimmon for that of the quince, on account of the astringent taste which is common to both of these fruits, in the treatment of a diarrhea, the result of mere relaxation; and a decoction of flaxseed may well replace, in certain cases, that of the root of the althea.

To illustrate epilogism or analogism still further, suppose a patient is attacked with pain in the hypogastric region, which is sometimes very acute, again less so; returning irregularly, and then sometimes entirely disappearing. If these pains are increased by walking, and especially by riding on horseback; if the emission of urine is occasionally interrupted suddenly, to commence again after an irregular interval; if a metallic sound introduced through the urethra into the bladder, comes in contact with a body that creates a sensation of rubbing against a rough and solid substance, this concourse of circumstances would authorize the physician to think that a vesicular calculus is the probable cause of these symptoms. Likewise, if the cranium of an individual who has accidentally lost his reason, presents cicatrices, and a depression of bone, it would be permitted to conjecture that a wound of the head is the cause of this mania. Finally, if an individual has been bitten by a strange dog, though the wound may present nothing peculiar in its character, it would be prudent to treat it as an envenomed wound, because observation teaches that the bite of a mad dog resembles entirely that of any other dog, and when there is doubt, it is best to take the surest method for the prevention of hydrophobia.

DEFINITIONS OF THE EMPIRICS.

As these physicians rejected, absolutely, the latent causes, and the so called essential elementary or primitive properties of disease, they could not admit the definitions of the Dogmatists, which are based, for the most part, on the pretended essence of things, or on their proximate or occult cause. They replaced them, therefore, by a simple description, called hypotyposis, which consists in an abridged enumeration of the sensible phenomena. Thus, instead of defining fever, like Galen, to be an unnatural fire fixed in the heart; or, with Asclepiades, an accelerated movement of the blood, occasioned by the obstruction of the pores; or, with Erasistratus, an affection proceeding from the passage of the blood from the veins into the arteries, they say, fever is an affection which manifests itself by an acceleration of the pulse, the augmentation of heat, accompanied often by thirst. While Galen made health consist in the normal temperament of the heat, cold, dryness, or moisture, of the different parts; in the exact proportion, number, and situation of compound parts, and in the perfect mixture of the humors, the Empirics said, very simply, that a man was supposed to be in good health, when he enjoyed the complete exercise of all his functions.

EXPLANATION.

I must remark, *a propos* to the definitions, that the doctrine of the ancient Empirics is very singularly related to that of modern Sensualists. The Empirics rejected occult causes, and the properties called essential, or primitive; they denied that we are able to know the intimate nature of things, that is to say, what things are, in themselves. They assumed, that we are able to seize only the relation of things to us, and among themselves, because these relations are due to our sensations, and all our knowledge comes through the organs of sense. They insist that our judgment and reason, in the facts of Medicine, can never pass the limits of the capacity of our senses. In fine, they replace definitions by simple descriptions, which accords with thepractice of modern Sensualists.*

ANATOMY AND PHYSIOLOGY,

The Empirics are reproached with having neglected anatomy and physiology. This is supposed by some, however, to be exaggerated; they did not deny, absolutely, the utility of these two branches of medical science, but regarded them as accessory; yet they placed clinical observation before all. It is difficult to know the truth, on this point, while we only know the opinions of the Empirics through their adversaries.

* See Art de Penser, de Condillac, part. 1, chap. VIII and X.

It does not appear reasonable, that the disciples of the greatest anatomists of antiquity could have denied the importance of the discoveries of their masters. However this may be, if the coryphei of Empiricism have committed this medical heresy, they are so much the more culpable, as it is in flagrant contradiction to the fundamental principle of their doctrine. How could the philosophers, who supposed all ideas derived from sensations, depreciate anatomy—the only one of the departments of Medicine which owes almost nothing to reasoning, and which obtains, on the contrary, all its light from observation? Besides, is it not evident, that a knowledge of anatomy is necessary for the practice of surgery? As to physiology, the ancient Empirics are somewhat excusable for having despised it; because, in their time, the science was, in general, made up of long dissertations on the principle of life, the elements of the body, the primary cause of generation, and a crowd of other mysteries, just as impenetrable. But by the side of this transcendental and empty physiology, they reared another, less ambitious, which following anatomy, step by step, was limited to the description of the functions of organs of which anatomy showed the form, situation, and structure. This last physiology, which I call organic, to distinguish it from the other, is eminently useful, and, I will say, indispensable, to the pathologist and practitioner.

### THERAPEUTICS.

In the remote ages, as we have heretofore said, there was no therapeutic axiom. When a treatment was successful in one affection, and there occurred afterward other analogous cases, or that appeared as such, the same treatment was employed, without inquiring whether it acted in virtue of one principle or another. The conduct of those who practiced Medicine in those primitive times, was purely instinctive; but proper reflection will show, that that instinct had for a basis an infallible axiom, which we have announced heretofore, and which it will be well to repeat now: *Those remedies which have cured one case of disease, will cure all cases analogous to it.**

This axiom has no need of demonstration; its truth strikes us like an axiom in mathematics. Nevertheless, Hippocrates and his disciples believed it their duty to substitute another in its place; not surer, but which they believed of more easy application in Medicine, to wit: *Diseases are cured by their contraries*; which was adopted almost unanimously, and is now invoked by most physicians.

We have, it is true, heretofore, pointed out two books of the Hippocratic collection, whose authors, without contradicting the axiom, deny

* See Mystical period.

that it is applicable to the cure of all cases. These authors affirm that certain affections have been cured by similars, while others again have been cured by remedies which appear neither to be similar nor contrary to the nature of the disease.*

The Empirics went much farther; they assumed that the intimate nature of diseases, as well as their proximate or essential causes, being impenetrable, we can not hope to discover the species of relation that exists between this nature, or these causes and the action of any remedy. Bleeding, they said, cures certain inflammations and exasperates others. Experience teaches us this; but who would be able to foresee the result? What connection is there between the subtraction of a liquid necessary to life, and the resolution of a phlogosis? A small dose of opium often produces sleep, while a stronger dose causes insomnia. Is there, then, an opposition between two unequal quantities of the same substance, that it should produce two contrary effects? Wine, taken immoderately, plunges certain individuals into a lethargic sleep; but in others it excites a furious delirium. Is it similar to the nature of the first, and contrary to that of the second, or *vice versa?*

Those who maintain that it is necessary to know the essence of a disease, before treating it, should at least agree on what the essence is. But if you ask some of them, in what consists the nature of a phlegmon, one will respond, that it is a tumor, caused by the excessive heat of the blood; others, by the acridity of the bile; a third, by the closing of the pores; a fourth, by the extravasation of the blood, etc. But, while waiting for the dispute to terminate, if ever, what guide shall we take, to treat properly a tumor of this kind? Certainly there is none other than experience. Experience, alone, has taught us what we must do in such a case.

All that may be affirmed for a treatment which has been successful in disease, is, that it will procure the same success afterward, if it be employed against the same concourse of pathological phenomena. Thus, therefore, the important and essential matter in order to make the curative indications as precise as possible, is to observe carefully, and define well, the pathological phenomena.

As the practitioners of the same epoch employed very nearly the same means of cure, notwithstanding the divergence in their theories, the Empirics concluded that in reality all were influenced to do so by experience, which varies but little, while theoretical explanations contradict themselves incessantly.

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* Œuvres d'Hippocrate, trad. par Littré, T. I: Traité de l'Ancienne Médicine, from § 10 to 20, inclusive. Traité des Lieux dans l'Homme, §§ 67, 68, 69, 70.

*Note.*—Every physician knows the aphorism: A vomit will often cure vomiting.

COROLLARY.

Moreover, the question which we now discuss is one of the most interesting and intricate. It constitutes the basis of therapeutics, or of the Art, properly speaking. It has been, at various epochs, the subject of long debates, and must, therefore, be presented more than once in the course of this history, and particularly *apropos* to modern theories. It is not yet, therefore, the proper time to discuss it in full. I will only say, in anticipation, that a disease is never the result of a unique influence.

Take, for example, several individuals wounded by a sharp instrument, in the same manner, and in the same region of the body. Here is a very simple affection; nevertheless it is probable that it would not run the same course in all, on account of individual peculiarities, which are so different. Thus, in the most simple cases, the disease is always subjected to several simultaneous, or successive influences, so that it may be regarded as the result of several forces. Now, to neutralize the bad effects of this result, and to destroy it, it is not always necessary to oppose to it an influence directly contrary, and of an equal or superior energy. Ordinarily, we may suppose that it will suffice to change the direction of this result, or moderate its intensity, by modifying one alone, or a few of its component forces.

ORIGIN OF PHILOSOPHIC, OR RATIONAL EMPIRICISM.

Some authors think that Empiricism is a deduction from the Skeptical, or Pyrrhonean doctrine. Galen seems to be of this opinion, when he advises an Empiric to imitate the modest conduct of a Pyrrhonean philosopher, to prove himself as simple, sincere, exempt from all ambition, and seeking to prove the excellency of his doctrine, by a skillful and happy practice, rather than by a long discourse.*

Kurt Sprengel adopts the above sentiments of Galen, and asserts that medical Empiricism is a consequence and off-shoot of philosophic Skepticism.† Nevertheless, Sextus Empiricus, a medical philosopher who lived at the commencement of the third century of the Christian era, and who has left an apologetic explication of the Pyrrhonean philosophy, denies that there is, between that doctrine and Empiricism, the analogy that many persons have supposed they have seen.‡

This difference of opinion obliges me to throw a comparative *coup d'œil* on the two systems. 1. The Pyrrhonean philosophy rests in doubt in regard to every thing, because there exist, according to it,

* De Subfiguratione Empirica, cap. XIII.

† Histoire de la Médicine, Paris 1815, T. I, p. 469, et suiv.

‡ Text. Empir. Pyrrhon. Hypotyp. lib. I, cap. XXXIV.

equal reasons for affirmation and negation, in all questions. The Empiric rejects the opinions which are not immediately derived from the senses, but admits the certainty of facts, and truth of observations. 2. The Pyrrhonian philosopher says, that there are sensations which are pleasant, and others that are disagreeable; it offers as an example, that honey is sweet to the taste—that pain is distressing; but if asked, in what consists the essence of the sweet taste, and the suffering of pain, he ingenuously acknowledges his ignorance, and replies, that he knows nothing about it. The Empiric accords with the Pyrrhonean in this: he confesses that he is completely ignorant of the essence of things, and affirms, moreover, that the question is impenetrable, because it is inappreciable to the senses. The Dogmatist on the contrary does not hesitate to give an explanation of the essence; he will tell you that pain proceeds from a disjunction of the elements, and that the sweet taste is derived from the temperate mixture of heat, cold, dryness, and moisture.* 3. The Pyrrhonean is naturally inclined to inaction, never feeling a positive motive to take a part. In medicine he will follow, from predilection, the expectant plan. The Empiric employs, on the contrary, an active medication. Convinced of the truth of the rules of his art, which he believes deduced from exact and repeated observation, he does not hesitate to put them in practice.

This parallel between the two doctrines proves that, while there is between them some similitude, there exist, also, capital differences, which prevent us regarding them as proceeding from a common source. On the other hand, in following attentively the phases of this history, it is easy to see that Empiricism has an origin purely medical. We have seen, in the first place, that physicians of primitive times followed by instinct the Empirical method; much later, Acron of Agrigentum, cotemporary of Pythagoras, affirms, that experience is the only true foundation of the Healing Art. Hippocrates, himself, although endeavoring to attach his medical doctrine to the Pythagorean dogmas does not less proclaim, in many cases, the superiority of observation to theory; and in his clinical observations he shows himself more careful to report, faithfully, the facts, than to justify his theoretical views.

The surprising progress of anatomy and physiology, during the first ages of the Alexandrian Institute having confounded several points of the Hippocratic doctrine, the confidence which it inspired began to diminish. Then a thousand new speculations were hazarded, to explain the functions of the animal economy, which nullified each other. In the midst of this anarchy, wise practitioners, to whom experience

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* See Galen and Hippocrates.

demonstrated every day the utility of certain remedies, continued, naturally, to seek in experience alone, a refuge from the incessant variations of Dogmatism, and the sterile incertitude of the Skeptics.

If, now, the question be asked: to what philosophical doctrine Medical Empiricism is attached, there is not one of my readers who is not in a state to respond, that it is intimately united to the sensual philosophy; a philosophy, of which the foundations were laid by Aristotle, but who abandoned it almost immediately, to trace the rules of metaphysics, and the logic of rationalism. In short, that philosopher, deceived by superficial observation, asserts that general ideas are the first that are formed in our minds, by the aid of the senses, and that they constitute the principles—the beginning of the sciences. Now, modern metaphysicians have demonstrated, that the sensations give us only individual ideas; and that general ideas, being the result of an operation of the understanding, called abstraction, are the last formed; whence it follows, that, so far from being the foundation stone of the scientific edifice, they are the key stone of the arch.

The Empirics adopted the basis laid down by the chief of the Peripatecians;* but, instead of engaging, as he, in seeking at first the generalities of science, *malapropos* termed principles, they confined themselves to a careful collection of facts, and an exact narration of them, in order to deduce therefrom rules of practice. We see that, in this way, they laid the true basis of the Art; but by not attempting to elevate themselves to the most abstract generalities, and universal axioms, they left their work incomplete, not indicating, even to their successors, the final end to which they should direct their labors.

### PROGRESS OF EMPIRICISM.

The Empirical doctrine took, at first, a rapid extension; we have already cited the names of three celebrated authors, who taught it towards the epoch of its foundation. Galen cites a much greater number, of whom several wrote much, but whose works are entirely lost to us. It appears that in the time, even, of that author, the term Empiric was not yet a disgrace, and that men of high public estimation were attached to it. Galen, who was not accustomed to flatter his adversaries, and who covered with contempt the Methodists, speaks of the Empirics with much regard; he avows, more than once, in combating their system, that their arguments unsettled him.† We have seen that

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*In a passage heretofore cited, Aristotle says, formally, that the sensations beget ideas and remembrance, from which flows, subsequently, experience, the common origin of the sciences and the arts.

† Galen, De Subfiguratione Empirica, cap. XIII., et passim.

the Methodist, Aurelianus, spoke of some of them in very honorable terms. Finally, the Eclectic, Celsus, judges them still more advantageously.

The moderns who have given themselves the trouble of studying the ancient doctrines, have nearly all admired the wise and ingenious economy of the system of the Empirics. I will cite, among others, the historians Daniel LeClerc and Kurt Sprengle. The last expresses himself thus, in one of the passages where he eulogises Empiricism: "I see, in all these principles, the most evident proof of the great sagacity and sound judgment of the ancient Empirics. Certainly, they were more inspired by the true genius of medicine, than most of their predecessors (the Dogmatists), who gave themselves up to vague theories."*

The circumstances in the midst of which Empiricism was proclaimed, were most favorable for its propagation. Medical theories had fallen, as we have seen, into confusion. All the principles, methods, and opinions, were questionable. The recent discoveries in anatomy; the introduction of a considerable quantity of new medicines, whose properties were yet undetermined; the furor of the philosophic disputes, which increased, all disturbed the antique dogmas, without substituting anything better in their place, or, nothing which obtained general favor. In the midst of such conjectures, a doctrine which proposed to put an end to the perpetual variations of Dogmatism, and avert the sterile incertitude of Skepticism, by resting solely on the evidence of facts, ought to have been received with enthusiasm, especially by those practitioners, to whom daily experience demonstrated the uselessness of dialectics to advance medicine.

### DECADENCE OF THE SYSTEM OF THE EMPIRICS.

Although Empiricism was founded on pure observation, we can not hesitate to perceive that it did not put an end to differences of opinion, nor incertitude; for if rationalism, which proceeds from generals to particulars, is subject to deception, the experimental method, or sensitiveism, which proceeds from particulars to generals, has also its gropings. Moreover, the ancient Empirics, by stopping at secondary generalities, without striving to go up to first principles, or, better still, to definite axioms, resemble workmen who stop in the middle of the erection of an edifice. Finally, the greatest wrong of Empiricism, in the eyes of antiquity, was, in not attaching itself to any philsophic theory then known. Such a doctrine, though able to captivate practitioners by its simplicity, could not satisfy speculative minds. It had not, then, the elements of life required by the learned world at that epoch; so its

* Hist de la Med., T. 1, p. 476.

fall was complete. Empiricism has been in disgrace for many ages, and its name has become synonymous with ignorance. Nevertheless, we shall see it revive from this long humiliation, and aspire, even rashly, under the name of the Experimental method, to universal dominion in the sciences, after the labors of Bacon, Locke and Cordillac shall have cleared up, somewhat, its metaphysics.

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### ART. III. ON METHODISM.

The doctrine of Empiricism had been proclaimed about a century and a half, and in that time a great number of celebrated physicians endeavored to establish the Healing Art on its principles. They collected clinical observations with as much care as possible, and made from them, model descriptions of each species of disease, with the indication of those remedies that had produced the most advantageous effects. But they had vainly multiplied these model descriptions or paradigms; cases were incessantly appearing, in practice, that presented different features from those that had been observed, which required the construction of new theorems; for, according to this doctrine, every concourse of symptoms not before described by authors, was thought to represent a new disease. In this way, there was a tendency to an indefinite multiplication of morbid species, and the Empirics fell into the same defect of which Hippocrates had reproached the Cnidians; a defect which must inevitably lead to confusion, so long as similar kinds were not united in a common species, and analogous species into other groups of a superior order; in short, so long as they did not rise from secondary generalities to more elevated ones. Thus, pure Empiricism, such as its founders had conceived, had reached its limit, and could render no further services to science, and though it had laid the true foundation of the edifice, was incapable of continuing and completing perfectly the structure.

In the meanwhile, a man endowed with rare intelligence, and a remarkable faculty of elocution, but better versed in the doctrines of the philosophers and grammarians than in the practice of Medicine, Asclepiades, of Bythinia, came to Rome with the intention of teaching rhetoric. The charms of his mind, his talents, and his address, gave him, immediately, access to the most illustrious persons of the Republic. He taught eloquence, for a time, with great éclat, and as early as the one hundred and fiftieth year before Christ, enjoyed a high reputation as a rhetorician, for Cicero honored him with his intimacy. Notwithstanding this, he abandoned the career of letters, to under-

take the practice of Medicine; but, being unwilling to follow in the tracks of his predecessors, he took upon himself to create a new system. Imbued with the philosophy of Epicurus, then in high repute among the higher classes of Roman society, he deduced from it a theory which united to its merit as a novelty, that of being in harmony with the philosophic ideas most in vogue.

Asclepiades taught, as a consequence of the dogmas of Democritus and Epicurus, that the elements of the body existed from all eternity; that they are incommutable in their essence, indivisible, impalpable, and perceptible to reason only. These elements, which he named atoms, possessed no quality, *per se*, but were of various shapes, and animated by a perpetual motion; and that from their frequent encounters and fortuitous combinations, all sensible things, all the phenomena of the universe, were supposed to result. When any one asked this innovator, how it was that the body could be endowed with properties, when its constituent parts had none, he replied, that compounds and aggregates differ very much from their elements; that the order and number in which the atoms became united, the shape and size of bodies which resulted from their aggregations, were the sole causes of the properties observed in them. Solid silver, he said, is white, but reduced to powder, it appears black; the horn of the goat, on the contrary, is black, but if it be rasped, the particles are white.

Passing from general physics to physiology, Asclepiades affirmed that the human body is formed of tissues every way permeable, that is, pierced with invisible holes, which he named pores, through which passed and repassed, continually, atoms of various shapes and sizes. He pretended to explain all the physiological and pathological functions, the secretions, sensibility, pain, etc., by the spontaneous movements of the atoms, and their continual passage through the pores of the body. Health depended on the extent of the exact symmetry of the pores with the atomic molecules. Besides, he repelled, with derision, the hypothesis of a motive principle in the animal economy, endowed with instinct, and watching over the preservation of the entire body or any of its parts. He ridiculed the theory of Hippocrates, on coction, crisis and critical days, for he did not expect any beneficial action from the efforts of nature, and relied entirely, for the cure of the sick, upon the skill of the physician. He called the circumspect therapeutics of the venerable man of Cos, *a meditation on death.*

If the physiological explanations of Asclepiades were but little calculated to deceive a thoughtful mind, and especially physicians, who were accustomed to watch the progress of diseases, his therapeutical maxims were eminently calculated to secure to him the confidence of

the sick. He proposed no other aim in his treatment, than to enlarge the pores when they were too contracted, as the result of the constriction of tissues, and to close them when they were too open. To attain this end, he said, only certain, prompt, and agreeable means should be employed. Consequently, he rejected all violent remedies, such as vomits, drastics, incisions, and the cautery. He employed bloodletting rarely, and recognized only a small number of surgical operations. His favorite remedies were generally taken from hygiene, such as walking and other physical exercises, riding on horseback, in carriage, and in boat-rowing; frictions executed in various manners, and wine, which he administered frequently, either pure or medicated, etc.

Unquestionably, these means are useful in many cases; employed appropriately, and concurrently with others, they render great service, especially in chronic affections, and during convalescence; but to limit medical counsel to their use alone, and to abstain voluntarily from many other resources, more powerful, is to exhibit a desire to please patients, and obtain their good will, rather than to be desirous of restoring them to health. Thus, Asclepiades, aiming at a circumstantial success, rather than at solid reputation, obtained, notwithstanding all his talents, but an ephemeral celebrity.

Themison of Laodicea, a disciple of Asclepiades, was led by the teachings of his master, to lay the true foundation of Methodism. After having divided, like him, all diseases into two great classes, under the title of acute and chronic affections, he separated each class into three species, viz: the constrictive or contracted; the fluxionary or relaxed; and the mixed. Then he established the distinction of these species, not on the occult qualities of the Dogmatists, nor on the consideration, no less hypothetical, of the state of the pores, but on the sensible characters drawn from medical observation. He called these characters, sometimes, communities, because they were common to diseases of the same species, and again similitudes, because they indicated certain likenesses or similitudes in diseases.

The communities of the constrictive species, are swelling, tension, and hardening of structures, the partial or complete suppression of some natural evacuation, all the signs, in short, that indicate the constriction of tissues. The communities of the relaxed species are softening of tissues, the diminution of the entire volume of the body, or some of its structures; the increase of ordinary evacuations, or the appearance of some abnormal evacuation. Lastly, the communities of the mixed species consisted in a mixture, a coincidence of signs that indicated both constriction and relaxation.

Themison had attained an advanced age when he published his plan of reform, and we are ignorant to what degree of perfection he carried it. We know, simply, that Thesalus of Tralles, and Soranus of Ephesus, made changes in, and additions to it; but it is impossible to say precisely, what part each of these authors took in the creation of the system of the Methodists, now when all their works have been lost. There exist none of the writings of this sect, but the treatise of Cœlius Aurelianus, of whom I have already spoken; and it is the work, from which we have extracted, almost entirely, what we have said concerning the doctrine of Methodism. The following will show the arrangement of diseases: first, the constrictive of the acute variety; apoplexy, angina, lethargy, convulsions, ileus, madness, etc.; of chronic affections, cephalalgia, vertigo, epilepsy, mania, jaundice, amennorrhea, obesity, etc.; secondly, the relaxed species: cardialgia or gastralgia, cholera, hematemesis, and other hemorrhages, including the hemorrhoidal flux; thirdly, and lastly, of the mixed species: peripneumonia, pleurisy, colic, disentery, etc., asthma, paralysis, catarrhs, phthisis, etc.

It is plain that there is much that is arbitrary in the above classification. Besides, the Methodists were not agreed amongst themselves, on the class in which several of these should be placed; some, for instance, insisting that hydropsy belonged to the constrictive class, others to the relaxed; some thought asthma should be enrolled among the mixed, others, that it belonged to the fluxionary species, and so forth. But the greatest reproach that can be brought against the classification of the Methodist, is the union of very different diseases, in one community, and the separation of analogous ones. However this may be, this attempt at a pathological classification, founded on the evident characters of diseases, and not on occult causes, or imaginary qualities, was a great progress.

It followed from this division of diseases, that with the Methodists there were only two kinds of therapeutical indications to fulfill, viz.: to relax when there was constriction, and to constrict where there was a flux or relaxation. Also, they admitted but two modes of treatment, which they named curative communities. All therapeutic agents were comprised in one or the other of these communities. Blood letting, for example, cups, emollient cataplasms, warm and laxative drinks, sudorifics, warm air, sleep, exercise carried to fatigue, etc., form a part of the community of relaxants. Darkness, fresh air, cold and acidulated drinks, decoction of the quince, red wine, or vinegar, solution of alum, etc., were ranked in the community of astringents.

Some Methodists admitted a third curative resource, which they named prophylactic. It comprised all the special means in use, to

prevent or arrest the toxic effects of poisons and venemous substances. But the pure Methodists, such as Aurelianus, rejected this community, and would not admit specific remedies, any more than specific diseases. They erased from their materia medica, purgatives, diuretics, emmenagogues, anodynes, somnifera, etc., excepting from this general proscription vomits only, which they gave, not with a view of evacuating the bile or phlegm, like the Dogmatists and Empirics, but to give the economy a shock which would open its pores, and change the general disposition of things.

In the progress of diseases, the Methodists distinguish three periods, or temporary conditions, viz.: the periods of development, stasis and decline. Each of these temporary conditions required particular care, and became the source of the curative indications.

Lastly, there was added a fourth or last community, called chirurgical, that embraced all the operations of surgery. It consisted in removing from the body the things which were foreign to it, and unnatural. This lass was subdivided into several others, accordingly as the foreign or unnatural things were of external origin, as a thorn, an arrow, etc., or, as they were from within, as a tumor, an abscess, an excrescence, an ulcer, or hair-lip, etc.

By the help of these summary considerations, touching the common symptoms of diseases, and their curative indications, the Methodists believed they might dispense with all ulterior research. They did not inquire for the causes, whether occasional or proximate, because they said from the moment that the disease is developed, it is necessary to cure it. The indications in diseases were to be drawn from its nature, characters and progress, and not from anterior circumstances, which exert no influence. Now, the nature of diseases consisted, uniquely, according to them, in the conditions or communities of which I have spoken. Neither did they attach much value to the precise knowledge of the seat of the disease, or affected parts; nor to the consideration of the age of the patient—his habits—the general state of his forces—nor to climate and season. They assumed that these details were superfluous, and could not affect any notable modification of the treatment. For, according to their system, an affection of the constrictive species, such, for example, as an inflammatory tumor, always requires the same kind of treatment, whatever may be its locality, or the age of the patient, the climate or the season. If, sometimes, they gave attention to the region particularly affected, it was only for the purpose of applying the topical treatment indicated, more exactly at the seat of the disease.

The Empirics, anxious to secure themselves from the error into which

the search for proximate causes, first principles and elements, had drawn their predecessors, the Dogmatists, could think of nothing better than to banish from science all transcendent generalities. Finally, then, to keep as near as possible to the truth, based on observation, they established as many morbid species as they had encountered different assemblages of symptoms. This resulted, at length, in such a multitude of species, that it became extremely difficult to recognize them, separately, especially as some among them were only separated from each other by light shades of difference. To obviate this embarrassment, it was necessary, as we have already said, to unite together all the analogous morbid species, and form them into genera, which being few in number, and distinguished from each other in a marked manner, could easily be recognized; then, with a knowledge of the genus, the mind could easily descend to a determination of the species. In this way, a philosophic method serves as a lever to the feebleness of our understanding.

But the Methodists misconceived the true use of the groups of the second order, i. e., the genera which they had established. Instead of making use of them to arrive more conveniently at the determination of the species, they rejected them as useless, and preferred to rely exclusively upon their general principles; so that they would treat by the same means, mania, jaundice, amenorrhea, etc., which are chronic affections of the constrictive genus; and, on the other hand, peripneumonia, colic, dysentery, etc., acute affections of the mixed order, were also all treated alike. They had no regard, either to the natural tendency of the vital forces, or to coction or crisis, or a multitude of other essential circumstances which we have lately enumerated. Lastly, they had much less regard for anatomy and physiology than the Empirics. Their desire to simplify the practice of medicine was so great, that they submitted all their patients to a uniform regimen. They were all required to fast for the first two or three days. During the second ternary, they allowed them a small quantity of food, and so on, increasing their nourishment gradually, every three days. Their mania for uniformity is nowhere revealed more sensibly, than in the mode of treatment called the metasyncritic circle, or, more simply, *metasyncrisis*, which they employed in very obstinate affections, after having exhausted their ordinary means. The following is a description of the famous *metasyncritic circle*, as given by Cœlius Aurelianus, in his treatise on chronic diseases, Book first, chapter first:

"The first day, the patient must fast; the next day, after being carried into the open air for a short time, he is to be anointed, and even bathed, if his pain permit; then he is to receive one-third the quantity of bread which he was in the habit of using in health. He is also

allowed to eat salted and roasted meats, dressed with mustard, green olives preserved in salt, and other things of the same nature; but he must abstain from pork, from garlic, onions, and other herbs which excite the brain. As a beverage, he shall have wine; and this diet is to be continued for two or three days, if he can support it: and sometimes fish and brain are to be added to the above mentioned meats. After this, the second third of the bread of which he was deprived may be allowed, with brain and fish, and herbs, for two or three days. Finally, his full amount of bread is to be given to him, and the former meats exchanged for that of fowls; which latter is to be continued as long as the preceding; and, lastly, is to be followed by the use of pork.

"If it is desirable to change more frequently, the bread may be divided into four parts—so that one part may be given at each change of the meats—thus, the first part is given with the middle diet, another with fowl, a third with game, and the fourth with pork; but, to prevent the patient becoming disgusted by eating, for so many days, the same sort of meats, it is necessary to vary as much as possible, each kind of food. The first day, for example, when he uses salt meats, he should make the meal with a sardine, and a little sea-fish. When he uses middle diet, which is composed of fowl, he must use sometimes a thrush, and, at others, the titlark, or snow-birds, or young pigeons. Apples may also be given, in small quantities, so as not to produce flatulency. When pork is used, vegetables must be added, taking care not to allow too many nor too rich articles. In changing from one sort of diet to another, frictions, and water as an exclusive beverage, are to be used; but, on the following days, wine may be given, and a bath be taken. It is unnecessary, nevertheless, to bathe every day; because too frequent bathing may renew the headache. The movements of the body must be augmented and diminished by turns.

"This first part of the *metasyncritic circle* being achieved, we come to the second, in which no other treatment than vomiting is to be pursued. During the intervals, the nutrition drawn from salt meats and sour substances shall be suspended. The first day, the patient, after being exercised a little, shall endeavor to procure vomiting by the use of horse-radish, or with other medicines, if that fail. It is to be procured as follows: one pound of the bark of the root is taken, which, being cut up very fine, is soaked in honeyed water, called hydromel, to which is added a little vinegar, or vinegar of squills. The bark being thus prepared, it is all eaten a little before meal-time, and the liquor in which it was infused, drunk in small quantities at a time. Afterward, he must walk slowly, and then rest when he feels a sour and hot sensation, which takes place in about an hour. Then, he must take two

glasses of lukewarm water—not more, for fear of weakening the medicine—and put two fingers down his throat, so as to excite vomiting. This is to be continued, until every thing is thrown up that has been taken. Then a large quantity of water is to be drunk, to wash the stomach, and extinguish the remains of fire that the horse-radish may have kindled there. After this, vomiting must be excited afresh; and thus the water and vomiting must be repeated three or four times consecutively, until the water is thrown up as clear as it is swallowed.

"The vomiting being ended, the head is to be fomented, and the mouth rinsed with warm water. After awhile, a gentle promenade should be taken, to relieve the head from the agitation and excitement which has been brought about by the shock of the vomiting; or, what will have the same effect, anointing the body and rubbing it with the hands, from above downward, exciting everywhere an easy and equal perspiration. After this, two glasses of warm water are to be drunk, and the patient put to bed; where he rests in great repose of body and mind, without eating, or drinking, or sleeping, for some time, or until the agitation caused by the remedy ceases. If the patient be allowed to sleep, while the brain is excited from the effect of the treatment, the effect of the sleep being to produce contraction of the head, it would effect the contrary of what is desired. It is necessary, also, to abstain from meats, for fear of its decomposition by the heat and irritation of the stomach, resulting from the vomitings, as well as the remains of the horse-radish sometimes left behind, which, mingling with the food, corrupts it, and gives rise to flatulency; which, rising toward the head, increases the danger instead of diminishing it.

"The following day, the patient must bathe, and live on the middle diet, and after two or three days, he should complete the other parts of the circle commenced. If it is observed that the patient is sensibly better, and that he has intervals of perfect calm, after having gone through again the resumptive circle, the vomiting should be resumed, joined with drimyphagy or the use of salt food. In fine, the rest of the metasyncritic circle must be boldly achieved."

I terminate here this very long quotation, though I have not half finished the metasyncritic circle; those who wish to know it in full, will find it by consulting the original, or History of Medicine, by Daniel Leclerc, (2 part, liv. IV, sect. 1, chap. XI,) what I have reported will suffice to convince the reader that this series of proofs, somewhat severe, through which the patient is made to pass, is, at bottom, only a systematized perturbating method.

The founders of Methodism mistook the true use of the generalities that they established. Instead of regarding them as a progress, a

perfection of Empiricism, as a means of retaining and classing in the memory the numerous and precise details furnished by that sect, they rejected their details; they did not consider each genus as a collection of distinct species, necessary to be distinguished from each other, but believed, rather, that the knowledge of the genus dispensed with that of the distinction of species. They were ignorant, that the more an idea is general, the more it is separated from objective truth and phenomenal reality; and how could it be otherwise, when the greatest metaphysician of antiquity, Aristotle, had said that the first ideas formed in our minds by the intermediation of the senses, are general ones, while it was demonstrated, two thousand years later, that our first ideas are particular ones, always relating to individual objects?

The Methodist doctrine abridged, singularly, the study of Medicine, and to such an extent, that one of the coryphei of the doctrine, Thessalus, of Tralles, could say, without too much exaggeration, that he felt able to teach the whole Medical Science in six months. It is true, that inculcating solely in the minds of his adepts some superficial notions on the general characters of diseases, and the virtues of remedies, he placed them, without scruple, in the ranks of the profession, but not without frequently committing blunders. Unfortunate were those who imprudently placed themselves in the hands of these off-hand doctors; for they, not knowing how to discern the delicate shades which separate many morbid species, overlooked a multitude of precious indications, and prolonged the sufferings of their patients, or sent them into the other world, without supposing for a moment that it was the fault of their treatment.

Methodism made a rapid progress, from its advent in the medical world. It had, in the first place, as its admirers, the numerous vulgar herd of neophytes, who were anxious to finish their apprenticeship, to rush into practice. Secondly, it satisfied a natural penchant of the human mind, the love of generalizations, particularly felt at that epoch, and which Empiricism had not gratified. In short, it rested between Dogmatism and Empiricism, as a mediator, combining the advantages of both doctrines, without having any of their inconveniences. The Methodist said to the Dogmatist: I adopt, like you, rational truths only; I deduce them from sensible phenomena, and not from circumstances insusceptible to observation.

He said to the Empirics, like you I take observations for a guide; but I do not embarrass the Art with a multitude of precepts difficult to retain, and more difficult still, to put in practice. I deduce from experience a small number of rules, based on evident signs.

The above is, without contradiction, a fine programme, as are all the

programmes of system-makers; but we know very well how little its promises have been fulfilled. Galen was not duped by this reasoning. He demolished the sophisms of the Methodists, and demonstrated the insufficiency of their doctrine, and the dangers of their practice; he overwhelmed them with strokes of his satire, calling them the asses of Thessaly, alluding to the want of literary and medical instruction in a great number of them.

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### ART. IV. ON ECLECTICISM.

If we now take a retrospective glance of the systems we have detailed, we shall see that in all of them there are some valuable truths, confirmed by the reason and experience of all ages, while all are at the same time tarnished by some exaggeration or error.

The first of all and the most ancient, Dogmatism, directs our attention especially to the animal economy, in health as well as disease; it describes admirably the union of the vital forces, sympathies of the organism, and natural efforts, to repel both internal and external deleterious influences. One of the most characteristic and one of the most striking traits of these phenomena of life, is their combined tendency toward a common end, which seems to be premeditated, for the preservation of the individual, for a certain period of time. This nearly providential tendency manifests itself, particularly, in certain acute diseases, and those who first studied the progress of these affections, applied themselves, with a praiseworthy perseverance, to discover the laws which control the vital principal, or the organic forces, in each disease. This is the fair side of Dogmatism; the one which has resisted the caprice of opinion, and the progress of light.

But beside the organic force, there exist other forces which modify the action of the first—sometimes deranging and even masking and destroying it. These latter ones, which are named inorganic or physico-chemical, act sometimes in an obvious manner, as when a man is killed or wounded by a mechanical agent or a violent poison: again, in a latent form, as when there is developed in the human body a chronic disease, by the influence of regimen, air, or some similar cause. The Dogmatists divided the external forces acting on the animal economy, into four species, viz.: heat, cold, dryness, and moisture, which correspond to the four general forms of matter acknowledged by the physicians of those times—fire, air, earth, and water. Then, to maintain uniformity or harmony, they imagined in the living body the continual presence of four humors; blood, bile, atra-bile, and pituite, each one characterized by a predominance of one of the elementary qualities. Now, this classification

of elementary qualities or organic forces, their presumed analogy with the humors of the body, their mode of action on the economy, was entirely founded on imaginary hypotheses or presumptions. However, the causes of diseases being supposed to consist in the excess of some one of these qualities or humors, the treatment was directed against these supposed causes. That was the weak side of Dogmatism, and on which its enemies attacked it.

The Empirics were right in opposing the idea of inaccessible and occult causes becoming the basis of a rational treatment. They said, that the nature of diseases existed in the totality of their appreciable phemomena; or, in other terms, in the concourse of these symptoms. They affirmed that there was no constant relation of antagonism or similitude between a disease and the remedy which cures it.

The Methodists added a remarkable improvement to Empiricism, by forming secondary groups, destined to unite the primitive groups or the species of the Empirics. I will not recapitulate here the defects of these systems, because they must yet be fresh in the memory of the reader. I have sufficiently well proved, I presume, what I advanced at the commencement of this chapter, that, in each one of the three great systems of Medicine which prevailed during this historic period, there were excellent things, mingled with defects and errors.

Many physicians of antiquity held the same view: they comprehended vaguely, that the entire truth of Medicine did not exist in any one of these systems; but they could not precisely state, as we have done, that there was both good and evil in each, for the philosophic principles that guide us in our choice were yet unknown. These physicians, not being able to establish any general rule, which could serve as a basis for their judgments, decided each particular question according to their taste, fancy, or reason. They assumed the name of Eclectics or Episynthetics, to convey the idea that they adopted no system exclusively, but took from each whatever was best in it.

The Eclectics do not form a sect, since they had no precise dogma or theory of practice which was common to each and all who were connected with them. They professed to follow, on every occasion, the lights of reason and experience only; but that is a common idea which all the sects invoke, and which is not characteristic of any one in particular. The habitual state of an Eclectic is that of doubt and incertitude, so that they may be confounded with the Pyrrhonians at first sight; but reflection will show, that the doubt of the latter was absolute and universal, being the result of the principle they held, while the doubt of the Eclectic had no foundation in principle, but was only the effect of uncertainty.

Eclecticism, in Medicine, is the absence of all fixed principle, or, as I have said in my introduction, it is individualism erected into a dogma. Like the Proteus of the fable, it can not be seized, because it has no regular form; it escapes refutation, because it is entirely deficient in principles. Many practitioners were, or called themselves, Eclectics, to avoid the discussion of principles, to which they were little inclined or apt. Besides, with this profession they had the greatest possible latitude, on any particular occasion, to adopt the sentiments which they thought best. In fine, an Eclectic is a man destitute of any profound conviction, like a citizen who, in the midst of internal dissentions, sides with no party, wears no colors, is committed to no person, and who, on account of his indifference even, is perhaps, the better prepared to judge with impartiality the acts and arguments of each faction.*

### RESUME OF THE ANATOMICAL PERIOD.

We have now seen that medical studies, which were already flourishing in the isle of Cos, under the successors of Hippocrates, received a new impulse by the foundation of the school at Alexandria, and suddenly attained in that city a degree of prosperity unheard of before. We have pointed out some of the circumstances which concurred to this happy revolution; such as the formation of a great library, and a museum of natural history, open, if not to the public, at least to all professional men who fixed their residence in the capital of Egypt; the influence of the learned, drawn to that capital by the honors, rewards, and especially the perspective of an easy and secure life; finally, the dissection of the human body, which could nowhere else be practiced openly without peril, was not only authorized, but even encouraged by the sovereigns, who were above the prejudices of the age. By this union of circumstances, the school of Alexandria became the most famous in the world, for natural and medical sciences; and though the Roman invasion cut off a part of the advantages which it enjoyed, it still held the first rank.

During the historic period that we have just passed over, anatomy and physiology made the most progress; next followed internal and external nosography; lastly, medical and surgical therapeutics acquired great perfection. Two works on Internal Nosography, that of Aretæus,†

* Whatever yet remains of vague and indecisive, in the expression of our thoughts concerning the ancient systems of Medicine, will completely disappear, when we shall have exhibited the modern systems which are derived from them: because, then, we shall better know the real origin of the ideas and the mode of formation of the physical sciences.

† Aretæi Cappadocis, De Causis et Signis Acutorum et Diuturnorum libri, nova editio, Græce et Latine cum notis Kuhn, Lipsiæ, 1828, in 8vo.

and that of Cœlius Aurelianus,* have left far in the rear all that the preceding period has transmitted to us on this branch of science; nevertheless, the medical fame of no one of that period has reached the hight of that of Hippocrates; no man united in himself, perhaps, in the same degree as he, all those qualities that constitute the great practitioner — intelligence, sincerity, disinterestedness, the love of his Art, and of humanity.

In regard to theory, Medicine made also remarkable progress. Instead of a few general considerations, and a few incomplete essays at systemization, met with in the Hippocratic writings, the present period offers us complete systems, whose parts, closely co-ordinated, are more or less well adapted to the various forms of diseases, and practical details. Dogmatism, enlarged and improved, represents, as exactly as possible, the combined influence of the vital principle, or organic forces, with the properties of the physico-chemical elements, or general forces. Empiricism laid the foundation of a new scientific edifice; an edifice which it not only left unfinished, but of which, also, it did not perceive the definite end. Methodism, which should have been contented with indicating this end, in accepting the experimental contributions fur nished by Empiricism, rejected these, and flattered itself to be able to construct a medical edifice by commencing at the summit—that is to say, with the general properties of matter. It seduces, by an appearance of simplicity and rigorous exactness, but in fact constitutes only an ideal monument, which falls before the result of daily observation and practice. The Eclectic, not perceiving in any of these systems the truth in full, and seeing that none of them embraced the plenitude of science, but only a part—one aspect—refused to all his adhesion, and boasted of choosing from each what he considered best. Nevertheless, he does not define in what this consists; he gives no rule by which it can be known; he refers to the reason and experience of each one, *i. e.*, he proclaimed individualism, doubt, and isolation. In the midst of this conflict, Dogmatism, resting on the highest philosophical and medical illustrations, developed and sustained by the immense erudition and subtile dialectics of Galen, offers the most extended and reasonable explanation of the phenomena of the living economy. It thus must triumph, as in fact it did, its errors even contributing to establish it; for they were in harmony with the prejudices of the dominant philosophy.

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* Cœlius Aurelianus, De Morbis Acutis et Chronicis, nova editio, Amst., 1709, in 4to.

# BOOK II.

## AGE OF TRANSITION.

COMMENCING AT THE DEATH OF GALEN, DURING THE REIGN OF THE EMPEROR SEPTIMUS SEVERUS, A. D. 201, AND ENDING AT THE REVIVAL OF LETTERS IN EUROPE, ABOUT THE YEAR 1400.

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## V. GREEK PERIOD.

INCLUDING THE PERIOD OF TIME BETWEEN THE DEATH OF GALEN AND THE DESTRUCTION OF THE ALEXANDRIAN LIBRARY, WHICH OCCURRED IN THE YEAR 640.

### GENERAL CONSIDERATIONS.

At the time when this historic period commences, all the known parts of the ancient world were under the dominion of a single man. The empire of Septimus Severus had more extent than that of Alexander the Great, and inspired the hope of a much longer existence. The Roman dominion, cemented by seven hundred years of a skillful, bold, and persevering government, appeared seated on immovable foundations. The people of the adjoining frontiers troubled yet, occasionally, the peace of this vast territory, but none were strong enough to penetrate as far as its center, and place this gigantic power in any real peril.

The great civil wars had ceased, or had changed their object. The people and the Senate, those two eternal competitors, no longer contended for supreme power; they had both given over the struggle. The monarchical form was now accepted, not only as a fact, but as a habit and a necessity. The citizens no longer took up arms to change the form of government, but only for the choice of a master.

A revolution is progressing in the domain of the mind, analogous to that which had changed the political world. The discussions of the philosophers, so interesting in the schools of Greece, where the most

difficult questions in physics, morals, and metaphysics were discussed in full liberty, have already lost much of their interest, and very soon will cease entirely. The supremacy of one tends to be established in the whole intellectual world. The disputes relate but little to principles, but rather to the true meaning of the language of the teacher. In morals, Plato, Epicurus, and Zeno are followed, until a purer and more sublime morality, that of Jesus, son of Mary, takes the place of all the rest. In physics and metaphysics, Aristotle soon reigned despotic, and the authority of Galen is unrivaled in Medicine.

History, which should be the faithful image of society, becomes contracted, also, during this age, justly called the age of transition, because it serves as a transition from one social state to another. In place of offering the scene of great contests and movements, it is summed up in some sort in the biographies of individuals—in interior manifestations; and, to keep to our special subject, we will say, that the history of Medicine will no longer be taken up with discussion among various sects, and of choice between different methods; for there is now, and will be for ages, but one sect and one sole method. The progress of medical science, slowly retrograding, will no more be thwarted by any remarkable revolution; only, the scientific scepter will pass from the hands of one nation to that of another, and the language of Hippocrates and Galen will be replaced by that of Avicenna and Albucasis.

The first period of the age of transition offers for our consideration, only the lives and writings of four Greek physicians, all of whom had studied in the school of Alexandria, and whose reputations were sustained until the time of the invasion of the Arabs. Though these writers had made, for the most part, only a compilation of the works of Galen and other authors, they have rendered, nevertheless, a signal service in presenting science under an abridged and more commodious form, and in enriching it with several new particulars, and especially in preventing its torch being extinguished among their indolent cotemporaries.

## CHAPTER I.

### CELEBRATED COMMENTATORS.

### § I.

Oribasius is the first author of any importance in the history of Medicine, after Galen. He was also born at Pergamos, and lived in the fourth century. He attached himself, early, to the fortunes of Julian, surnamed the Apostate, and followed him into Gaul, when that

prince was named its governor. He recalls, himself, this circumstance, in the preface to one of his works. The young Cæsar appreciated the great qualities of Oribasius, and became very intimate with him, and after he was made emperor, appointed him Questor at Constantinople. After the premature death of that philosophic ruler, Oribasius remained faithful to his memory, but those who were envious of him, falsely represented his fidelity. He was disgraced, spoiled of his office and his property, and banished among a barbarous people. The courage which he displayed on that occasion, the extraordinary cures that he effected, the eloquence of his discourses, attached to him very soon the love and respect of semi-savage men, who wished to honor him as a god. The fame of the homage he received reached the ears of the emperors Valens and Valentinianus. They saw their error, recalled Oribasius, reimbursed him for his losses in his property and dignities, and permitted him to enjoy peaceably to the end of his days, his high reputation and fortune. Eunapius, a cotemporary of Oribasius, and a physician, gives a very flattering account of him. He was, he says, the wisest man of his time; the most skillful in Medicine, and the most amiable in conversation.

Oribasius has written several works, of which the most important, entitled *Collections Médicinales*, was dedicated to Julian, when he was only as yet Cæsar. It includes seventy books, of which seventeen only have reached us. The following passages, forming the preface, exhibit for what end, and in what spirit the work was undertaken.

"I have finished long since, divine Cæsar, the abridgement of the books of Galen, which you charged me to make, during our residence in the nearer Gaul. You deigned to express your satisfaction on the subject, and you enjoined upon me, at the same time, another work—that of reducing to a single volume, all that the most illustrious physicians have taught, of utility, on the Healing Art. I have, therefore, resolved to gratify you according to my abilities. I shall be careful to omit nothing of what Galen had said, because he is, of all those who have written on these matters, the one who has treated his subject with most clearness, reason, and method. He shows himself, besides, the faithful interpreter of the principles and sentiments of Hippocrates."

Oribasius edited, at a later period, an abridgment of his great work, for the benefit of his son. This abridgment, divided into nineteen books, has reached us complete, as well as another compendium, on the preparation of remedies and the cure of diseases, undertaken at the solicitation of his friend Eunapius.

This writer, as is seen, does not hesitate to avow that he borrows from the authors that have preceded him, and particularly from Galen, the greater part of his materials. Nevertheless, there are in his books,

certain fragments which are no where else found; but we are ignorant, whether they are his own, or borrowed from some authors whose works are lost; for he cites several, whose works are entirely lost, such as Herodotus, chief of the pneumatic sect, Archigenes, Posidonius, and Antyllus. However this may be, his principal merit consists in reproducing the ideas of others with so much clearness, order, and precision, that the summaries he has given of them are often preferable to the originals themselves. What he has said of pregnant women, nurses, and the earliest education of the child, has appeared so perfect to the writers that have followed him, that the most of them have copied him literally, to the beginning of fifteenth century. We shall quote an example of this in speaking of Paulus Ægineta.

Oribasius has written very little concerning surgery, but he is much more extended on anatomy, on which he follows Galen exclusively. His prepossession in favor of the latter is so great, and he makes of it so little concealment—he adopts so servilely, his theoretic idea, even to his expressions—that he has been surnamed the ape of Galen.

§ II.

Aetius flourished towards the close of the fifth century, and in the commencement of the sixth. He was born in the city of Amida, in Mesopotamia, and studied medicine at Alexandria, as we learn from him. He went afterwards to Constantinople, where he was attached to the court, with the grade of Count of the Palace, or chamberlain. Aetius appears to have been the first physician of any note, who professed Christianity. The following passages leave no doubt as to his religion, but they show, at the same time, that his faith was more enthusiastic than enlightened. In stating the composition of a certain ointment, he recommends that the following words be repeated in a low voice: "may the God of Abraham, the God of Isaac, and the God of Jacob, deign to bestow upon this medicament, such and such virtues."

In another place, he recommends, that to extract a bone from the throat the following words be pronounced: "bone, as Jesus Christ caused Lazarus to come forth from the sepulchre, as Jonah came out of the whale's belly, come out of the throat;" or in this form: "bone, I conjure you, by Blaises, martyr and servant of Jesus Christ, come forth, or go down." He exhibits the same credulity in not doubting the miraculous virtues attributed by the charlatans of his age, to a mass of their remedies.

Nevertheless, this author recommends himself to us in the same way as Oribasius. Like him, he has collected all that he has found remarkable in the writings of his predecessors, and has instituted a body of

doctrines, in such a way as to omit nothing essential. We are indebted to him, for the preservation of several fragments of antiquity, which otherwise would have been entirely lost. His work, divided into four sections, of four books each, formed a complete manual of medicine and surgery, except that it lacked anatomical descriptions, and what relates to luxations and fractures. His surgery consisted of external applications only. He points out the composition of a multitude of plasters and ointments, and recommends the frequent use of the cautery, both actual and potential. In his materia medica, the remedies are arranged according to the kingdom to which they belong, and in alphabetical order; but he does not describe, like Dioscorides, the natural characters of the substances; having been content to enumerate their medicinal properties, in which he adopts the ideas of Galen.

§ III.

Alexander was of Tralles, a city of Lydia, where the Greek language was very correctly spoken. His father Stephen, like himself, a physician, had five sons, whom he carefully educated, and who were all distinguished for their learning; but Alexander was the most celebrated of his family. After having traveled in many parts of Asia, Egypt, Spain, Gaul, and Italy, he fixed his residence at Rome, where he immediately acquired a brilliant reputation. Living to a very advanced age, and being no longer able to sustain the fatigues of practice, he was still willing to be useful by giving to the public the fruits of his long experience. To this end, he composed a treatise in twelve books, exclusively devoted to affections that do not require the aid of surgery. The first ten books treat of diseases of a special seat, commencing with those of the head, and finishing with those of the abdomen. The eleventh treats of gout alone, and the twelfth of fevers. It seems, nevertheless, the last should be placed the first, and such was the intention of the author, as expressed in his preface.

"Since you desire," says he, "dear Cosme, that I inform you of the remedies whose efficacy I have frequently proved in diseases, I feel impressed to acquiesce in your request, on remembering the kindness with which you and your father have honored me. I feel myself happy in having, in my old age, this occasion to gratify you, and since I can no longer support its fatigues, I have resolved to embody here, succinctly, the knowledge I have acquired in a long practice. I hope that those who shall read this book without prejudice, will be charmed by the exactness of my teachings, and the clearness and conciseness of my style. I have studied to employ, as much as possible, common and usual terms, so as to have my diction comprehended by the vulgar even. We shall

commence with ephemeral fevers, following the method of the divine Galen, to whom we shall endeavor to conform in this, as in everything else."

We see by the above that he professes, after the example of his predecessors, a great veneration for Galen; but he does not adopt, like them, his opinions blindly, at least in regard to practice. He allows himself, at times, to take an opposite view, not, he says, from a desire to contradict so great a man, but with a wish to present things in their true light; and though he makes no innovation, in a theoretical point of view, yet we place him in the same category as the two compilers of whom we have just spoken. From the manner in which he describes diseases and directs the treatment, we regard him as a good observer. He speaks of several, of which no one before him has made mention. Such, among others, is the case of a woman tormented by excessive hunger, called bulimia—a perpetual gnawing in the stomach, accompanied with a violent pain in the head. This woman was cured by taking iera, which caused her to pass a worm twelve cubits in length. This is the first time that a condition of this kind was attributed to intestinal worms. He advised bleeding in the foot in hemoptysis, and he says that he found it more efficacious than at the arm; because, he adds, performed thus distinct from the diseased part, it acts as a powerful revulsive. No better reason could be offered now, even, for a similar course. In tertian fevers, more particularly than in the quartan, he was accustomed to procure vomiting before the accession, and affirms that he obtained great success in this way. We conceive that it must have been one of the most efficacious remedies, before the discovery of the febrifuge *par excellence*. But what is most difficult to conceive, and which at the same time astonishes and afflicts us, is, that a man of judgment so sound, and a mind so enlightened, had faith in the virtue of amulets and talismans, the use of which he recommends on various occasions. Such was the universal prejudice of his age, that it was necessary for every man to pay tribute to the errors of his cotemporaries. Alexander has at least this excuse, that the whole world in his time was plunged in the same superstition; and we shall see, that up to an epoch very near our own, physicians of reputation, and learned men, partook of this weakness without having the same excuse.

Without pretending to place this author in parallel with Aretæus of Cappadocia, there exist, nevertheless, some traits of resemblance, which unite them. In the first place, they have both treated of a small number of diseases, only about sixty, which proves that they were only willing to speak of those they had seen and studied. Their plan of arrangement is similar, and is the most natural that could have been adopted

in their times. They were equally exact in describing the symptoms of diseases, and in tracing out the characteristic signs of those which are most likely to be confounded, on account of their similarity. Though the style of Alexander is much less elegant and pure than that of the physician of Cappadocia, it closely resembles it in clearness, conciseness, and energy. There is also this difference between them: Alexander does not give an anatomical description of the affected parts in each disease. But the reader himself shall be able to make the comparison, by placing the following description in comparison with that which has been given on a previous page.

"I do not give the name pleurisy," says Alexander, "to every species of pain in the side, for true pleurisy is the inflammation of the membrane which lines the chest. It is accompanied with an acute fever, which is owing to the proximity of the heart, which suffers sympathetically. If, then, you observe in a sick person, a difficult respiration, with acute fever, cough, and pungent pain, you may be sure that he is a true pleuritic. Those who are affected with an inflammation of the liver have also a fever, and breathe with pain; their side is also tender and painful, and they have a sympathetic cough; but the stitch in the side, and the hardness of pulse are absent.

"The following is the rule by which to distinguish pleurisy from hepatitis: they are distinguished, particularly, in the nature of the pain, and the character of the pulse. The pleuritics have a hard pulse, which gives to the touch the sensation of a saw; it is not the same in persons affected with hepatitis, nor do pulmonics experience anything similar, on account of the softness of the affected organ. The cough is also different in pleurisy from that in hepatitis. In the former, it is more violent, and is promptly followed with expectoration. During the progress of the disease the color of the expectorated substance indicates what humor it is which has given rise to the inflammation. Red matter shows that it comes from the blood; yellow, from the bile; that which is white and viscid announces the phlegm; dark, the atrabile. In hepatitis, there is cough, but no expectoration. Remember, though, that in pleurisy, sometimes, there is no expectoration; from which it follows, that it would be wrong to consider as a hepatitic, every individual who coughs without expectorating; for there are obstinate pleurisies, of difficult coction, and these are the most dangerous. The inflammation may also be seated below the false ribs, without extending into the chest; it may also be exterior. In these cases there can be no expectoration; but, then, the humors which cause the inflammation form an abscess, unless it is discussed, which rarely happens. Give, then, attention to all these signs, as well as to the color of the face.

Patients attacked with hepatitis are usually pale; it is the opposite with those who have pleurisy. In this way you may discern the latter." *

§ IV.

Paul, surnamed Ægineta, because he was a native of the isle of Ægina, is the last Greek physician who will interest us. Though the time in which he lived is somewhat uncertain, the most probable opinion places it toward the end of the sixth century, and the first half of the seventh. He travelled much, and doubtless spent some time in Alexandria, either to gain instruction in his Art, or to teach it. His skill in surgery, and especially in obstetrics, rendered him celebrated, even among the Arabs, whose midwives sent for him in consultation, it is said, from great distances, in difficult cases. On this account their writers frequently give him the surname of accoucheur; which does not signify that he limited himself to that branch specially, in surgery, but that he had acquired in it a great reputation, and rendered himself celebrated.

Paul of Ægina composed a compendium of Medicine, divided into seven books; after the example of others, he does not hesitate to borrow from his predecessors, or even to copy them literally. A number of chapters can be cited, taken entirely from Oribasius, and especially those that concern pregnant women, and the earliest life of infants. I will content myself by placing an example of this before the eyes of the reader, so that he may judge for himself the manner in which authors of those times plundered their predecessors.

| * ORIBASII SYNOPSEOS. | PAULI ÆGINETÆ. |
|---|---|
| LIBER QUINTUS. | LIBER PRIMUS. |
| CAP. V. | CAP. V. |
| *Educatio pueruli.* | *Educatio pueri.* |
| Puer nuper in lucem editus melle primùm nutriator; deindè lacte bis in die, aut ter ad summum. Quùmque id alacriter puer assumit, spesque est cum esse concocturum, tum cibus jam offeri potest qui ipsum non impleat: si verô nobis ignaris impleatur, tùm ad somnum proclivior et segnior efficitur, venterque intumescit et inflatur, et urina redditur aquosior: quibus notis perspectis, nihil dandum est priusquàm quod in ventre habet consumpserit. Satis erit biennium lacte nutrire; deindè verô ad cibos transeundudum est. | Primum alimentum recens nato infanti mel exhibere oportet; posteà vero lac præbere bis in die, aut ad summum ter. Quum autem et ipse promptus fuerit ad accipiendum, et spem exhibuerit concoctionis, tunc jam etiam cibus dandus est qui non impleat. Si verô nobis non advertentibus repleti fuerint, somnolentiores statim et segniores fiunt, et tumor in ventre adest et flatus, et urinæ sunt aquosiores. Ex quibus signis repletione deprehensâ, nutrix nihil exhibere debet, donec fuerit consumpta. Sufficit autem biennium lacte nutrire; deinde ad cibos transgredi. |

* De Arte Medica, lib. VI, cap. I.

But Paul of Ægina makes no secret of this course, which saves him from the reproach of plagiarism. "While it would be extremely difficult, not to say impossible, to retain in the memory the general principles of the Healing Art, and all the particular means advised by the ancients I have made this abridgement of what there is best of their writings. They are not my own conceptions which I propose, if exception be made of some details of observation noted in my practice; but, being versed in the reading of a number of excellent authors, and principally Oribasius, I have attempted, in imitation of him, to collect the cream of what others have said concerning the means of preserving health."

Notwithstanding this modest avowal, Paul is not deficient in originality. The surgical part of his book includes a quantity of observations which are his own, and which prove that he had performed many operations; and so far from following, always, the rules of others, he knew how to modify them according to circumstances, and to extend even the narrow limits of his art. He is often more explicit than Celsus, whether in the description of diseases and the curative indications, or in the exposition of a plan of operations. I will refer, among others, to the chapters relative to hydrocephalus, paracentecis of the thorax and abdomen, the extraction of vesicular calculi, and aneurisms. He is the first who pointed out and described varicose aneurisms; the excision of hypertophied mammæ in men, etc. He appears also to have been the first to perform the operation of bronchotomy, after a method which he borrowed from Antyllus, of which he has transmitted us a very detailed account. I will close what concerns this author, by the single remark, that Fabricius of Aquapendente, the famous surgeon of the sixteenth century, draws from him and Celsus the basis of his doctrines.

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## CHAPTER II.

### MEDICAL ORGANIZATION.

I have already said a few words on the medical organization of the most celebrated people of antiquity. I now proceed to examine this organization in a more special manner. I shall describe the principal changes to which the profession of Medicine was subjected, in proportion as civilization progressed, from the infancy of society to the ruin of the Alexandrian school. I shall speak of the few laws that regulated its teaching and practice in remote ages, and I shall show the origin of some institutions destined to extend the benefits of the Healing Art to the inferior classes of society.

I have put off, to the end of this period, what I have to say on this subject, so as to bring together, in a single view, everything that relates to it. By the aid of this concentration, the reader will be able, at one glance, to compare among themselves the various phases of the medical profession, throughout antiquity; for the extinction of the Greek domination in Egypt constitutes, in the history of Medicine, the separation of ancient from modern times. At that epoch, a new language and new authors made their appearance in the medical world—the scepter of letters and arts passed from the Greeks to the Arabs—and then commenced a new era.

If a general view be taken of the organization of medicine among the ancients, four distinct phases may be recognized; each of which corresponds to a form and particular state of civilization.

### FIRST PHASE.

At the origin of society, among the wandering tribes and small settlements, before the existence of great cities, and especially before the invention of writing, the treasury of human knowledge was very limited, and the memory of one man sufficed to contain it. It was composed of a few simple notions which were transmitted, verbally, from father to son—from the master to the disciple—and formed, often, the patrimony of a family. At this epoch, the same person often united in himself the authority of sovereign, priest and man of science.

Such were the patriarch Jews, Abraham, Isaac, and Jacob, and those whom Homer paints as the heroes of Greece—Hercules, Theseus, Jason, Achilles, Ulysses, etc. We see them after the combat, sometimes, dressing the wounds of their companions in arms, or preparing them a repast, or a sacrifice, or a funeral ceremony. We have before remarked that Machaon and Podalirius, surnamed the sons of Esculapius, on account of their surgical skill, were at the same time distinguished captains, and that most of the generals who served at the siege of Troy, boasted of having been the pupils of the centaur Chiron, renowned for his great skill in Medicine.

We know, also, that the Egyptians attributed the invention of the Healing Art, and all other arts, to several of their kings; but chiefly to Hermes, who was regarded as the author of several books that inclosed the secrets of Medicine. The Chaldeans attributed the honor of the same discovery to Zoroaster; the Chinese to Cinningo and Hohanti. In a word, we find the same tradition, with but slight variations, among all the famous nations of antiquity, which proves, evidently, that the chiefs of the people were nearly all, at the same time, priests and physicians. We shall give to this first phase of the medical profession, the

name of *patriarchal*, because the practice of Medicine constitutes a species of patronage and protection.

SECOND PHASE.

When the tribes or settlements had become nations, industry had made progress, and intellectual riches were increased by the aid, especially, of the admirable artifice which enables us to fix thought, and to give a visible body to the passing word; then the treasure of human knowledge could no longer be contained in the memory of a single man, and the highest function of society could no longer be executed by one individual; then a division was made, varying according to numerous circumstances, but which presented this remarkable peculiarity, that the priesthood and the practice of Medicine remained a long time united in many countries.

It was so in Egypt, when the priests of the time of Moses practiced Medicine, and all the learned professions. They were divided into several orders, of which each received only the species of instruction appropriate to the functions he professed to fulfil. The legislator of the Hebrews, reared among the priests, introduced the greater part of their institutions among the Jews. We have seen, that he confided to the Levites the duties of religious worship, and sanitary police or public Medicine, the only kind that is alluded to in his laws. In Greece, from the ruin of Troy to the dispersion of the Pythagorean society, the Asclepiadæ, or priests of Esculapius, appear to have been the only physicians of any public consideration. Their temples were transformed into dispensaries, where patients from the most distant countries came to receive counsel and treatment. The same phenomenon is reproduced in nearly all countries of the earth, at a certain epoch in civilization; we find it in the history of the ancient Greeks and of the inhabitants of the Brittanic Isles, in China and Japan, among the Tartars, in Africa, and in the New World; we see the same in Europe, in modern times, when feudal anarchy replaced Roman civilization.

This coincidence, which may be said to be universal, could not have been the result of accident; and it is easy to explain, by a little reflection, that in the ages of ignorance, credulity, and superstition, diseases were regarded as a celestial chastisement, an evidence of the divine wrath, or as the result of some malign influence, rather than as the effect of natural causes; and therefore, it was deemed more advisable to resort to prayers, expiations, sacrifices, exorcisms, etc.—as much, at least, as to the natural resources of Medicine. In this condition of the public mind, it was almost inevitable for the priests to take hold of the practice of Medicine; for they shared, also, the common opinion,

and supposed the cure of diseases a part of their attribute. I will, therefore, designate this phase of the profession by the epithet of *sacerdotal.*

THIRD PHASE.

Nevertheless, the clergy did not always, in certain countries, remain in exclusive possession of the secrets of Medicine. There came a time when the Art was no longer taught in an occult manner, and when its practice was accessible to every citizen. That revolution, we have seen, first took place in Greece, about the commencement of the fifth century before Christ, after the dispersion of the Pythagoreans. We have appreciated a few of the circumstances that accompanied it; among others the promulgation of the medical doctrines of Cnidus and Cos. We have shown how the families that had the direction of these institutions, and who assumed to be descendants of Esculapius, acceding, either willingly or unwillingly, to this general movement of mind, divulged the secrets of their practice, and opened the schools to the profane.

It is probable that long before this epoch there were in Greece, as well as elsewhere, individuals not adjuncts to the priesthood, who pretended to practice Medicine. These were medicasters of a low grade, herbalists, holders of some panacea or family recipes; but these were not the true depositories of the medical science of their time. The Asclepiadæ alone were such, and they made no communications to the uninitiated. It was not so after the revolution referred to; then medical science fell within the public domain, and to be admitted to the profession required only leisure, and the means to pay for books or teachers. Science gained very much by this transformation; but the profession was much lowered in the minds of the people, who now only saw it in the light of a lucrative occupation.

From Greece this revolution was extended into Asia and Egypt; it penetrated Rome about the time of the second Punic war, but made little progress there until at a later period, by the talents and address of Asclepiades of Bithynia. Until that time Medicine had been practiced at Rome under the patriarchal form. The oldest and best instructed of the relatives treated the diseases of his family, as he understood them; and it does not appear that the priests, more than others, assumed this function. Cato, the censor, was much engrossed with this domestic Medicine. He wrote a book on the subject, in which he recommends cabbage as a sovereign remedy in many cases. He venerated the number three, after the fashion of the Pythagoreans, and disdained not to transmit to posterity the magical words which he believed were useful to repeat for the reduction of luxations and fractures.

If this practice is not usually the most enlightened, or the most efficacious, it is in general the mildest and most disinterested. Besides, the old Censor carried to the end of his life a profound hatred against the men of the medical profession. Let us see in what terms he endeavors, by his familiar correspondence, to inculcate this hatred to his son Marcus. "I will tell you," he writes, "when I have an opportunity, what I think of these Greeks, and what I esteem most of what there is in Athens. It is good to study, to some extent, their letters and sciences, but it is not necessary to learn them fully. I shall be done with this wicked and proud race; nevertheless, be assured, as if a prophet had told you, that as soon as this nation shall have communicated to us its literature, it will spoil and corrupt everything, and this will be so much more easily effected if it sends us also its physicians. They have sworn among themselves, to kill all barbarians by means of medicine, and yet they require pay from those whom they treat, in order to gain their confidence, and thus ruin them more easily. They are insolent enough to call us barbarians, as well as others, and they treat us even more disdainfully, by calling us *opiques*. In short, remember that I have forbidden you to employ physicians." *

If the hatred of Cato appears to be blind and ridiculous, like everything which is exaggerated, it must be borne in mind that the Greek physicians who came to Rome merited, in part, these invectives. The greater number were only intriguants, without instruction or manners, having no other aim than to make a fortune, and capable of every baseness to attain it. Such is the picture that Galen has drawn of them, as we have shown elsewhere. Asclepiades himself, whose superior talents did not require for success the vile deceits of charlatanism, had recourse to these shameful means. We have seen that he promised all his patients an easy, prompt, and perfect cure, and I now add another proposition attributed to him: "whoever understands Medicine thoroughly is never sick." Fortune, it is said, seemed to confirm this aphorism on his own person, for he reached a great old age, and died from an accident. Such an example never lacks imitators, and long after Asclepiades, Thessalus, who was much inferior to him in merit, exhibited a much greater amount of impudence. He would only appear in public accompanied by a troop of bakers, boys, butchers, weavers, carders, and other artisans of the lowest classes of society, to whom he gave the title of pupils, whose vulgar language, it is said, he used. We can conceive the stir that such a suit must have made, and how much it served to increase his reputation among the ignorant. He carried his

* Cato, De re rustica.

audacity so far as to write to the Emperor Nero, that previous to himself, no physician had found anything certain for the preservation of health and the cure of diseases, and that he alone had discovered the true method of treatment. The chronicle reports that he had extraordinary success; but in what an age! and under what a prince!

The number of these false physicians was much more considerable at Rome than elsewhere. Galen has indicated the reason of this in the following passage: "In a vast and populous city, like the capital of the Roman Empire, it is easy for a stranger, and even for a citizen, to conceal his name, his birth, his fortune, and his conduct. A man is only judged by the luxury he displays, and the arrogance he exhibits. If accidentally he is discovered, it will suffice for him to change his location: while in a small town, all the inhabitants know each other; a man's relatives, education, and manner of life, are so well understood that fraud is impossible."

In the midst of this overflowing of charlatanism, the health of the citizens was given over to the mercy of the first imposter who called himself a doctor; for how could the cheat and usurper of the title be distinguished from the man of knowledge and probity, who had acquired it by study? No examination, no legal proof was imposed on any one who wished to practice Medicine; there was no security for the sick. Such a disorder could not always exist, and the excess of the evil led to its suppression, which in fact was brought about. Thus finishes the third phase of the medical profession, which we shall call the *unlicensed laity phase.*

FOURTH AND LAST PHASE.

The abuse to which this indefinite liberty led, in the practice of Medicine, having become intolerable, the legislative power was obliged to interfere. Now commences for the medical profession a new phase, which I shall call the *legal or organized laity phase.*

The Emperor Anthony the Pious, was the first who occupied himself with this subject. He made mention, in several of his rescripts, of the immunities to which those physicians had a right, who were employed in the public service, whether civil or military; but there is no evidence yet of examinations or proofs of qualifications, and we can only suppose their existence.* It is necessary to go as far back as the Christian Emperors to discover the traces of a regular medical organization. It was then, only, that the title of Archiater received a legal sense, and that certain functions were attached to it; while it does not appear to have

* Justiniani Codocis, lib. x. tit. LII. De Professoribus et Medicis, I. Digestorum, lib. XXVII, tit. I. De Excusationibus, VI, §1, 2.

been, ever before, more than an honorary title—an ambitious distinction, excited by vanity, and often usurped. Andromachus, physician to Nero, was decorated with it; but Galen, physician to Marcus Aurelius, never bore it. From the time of Constantine the Great, the name of Archiater is frequently met with in the edicts of the Emperors. It served to designate, sometimes, the physicians attached to the person of the sovereign, sometimes physicians fulfilling certain public functions in cities.

There were, consequently, two sorts of Archiaters; one named Palatine, who belonged to the household of the prince, holding rank amongst the officers of the court, and having at their head a count or duke, who was a peer with the higher dignitaries of the Empire. He bore the title of Count Archiater, or Count of the Archiaters, for historians differ in opinion in regard to these two denominations.* The others, called Popular Archiaters, formed in each town a kind of college, charged with the supervision of everything that related to salubrity. No one could practice medicine in their jurisdiction without having been examined by them, and recognized as sufficiently instructed. Whoever transgressed this regulation, was punished with a fine of two thousand drachms. These Archiaters were honorably pensioned by the State, and enjoyed various privileges. In return for these advantages, they were obliged to wait upon the poor gratuitously; but they had the right to charge those who were rich or in easy circumstances. The practitioners who were not members of the College of Archiaters, had no immunity, and lived upon the product of their practice.

The Popular Archiaters amounted to ten in the metropolis; seven, in cities of the second order, and five in those below. They were not chosen by the Governor, but elected by the citizens, from among the candidates who had given proof of their capacity before the College, and obtained its approbation.† Such was the first medical organization destined to remedy the frightful evils of anarchy. It subsisted until the dismemberment of the Empire by the barbarians.

It was during this period, about the year 400 of our era, that we see designated for the first time in medical books a class of citizens to whom was confided the duty of preparing the drugs ordered by physicians.‡ Their functions had some analogy with those of our apothecaries, though in knowledge and social position no comparison can be made between the pharmaceutists of our day and their obscure predecessors. Before this epoch the physicians prepared, themselves, or caused their students

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*Histoire de la Chirurgie, T. II, lib. VI, p. 715.

† Degest, T. IX, lib. L. De decretis ab ordine faciendis.

‡ Oribas. In prœmio Euporistorum, ad Eunapium.

or servants to prepare, the remedies which they needed in their practice, as is shown from various passages in Hipprocrates and Galen. The Pharmacopolists who were mentioned by writers anterior to the fourth century, were only druggists, or herbalists, to whom the physicians went to obtain simple substances, necessary for the confection of compound remedies. Perhaps, also, some of these pharmacopolists kept always ready some remedies of frequent and daily use, such as the *theriac.*[*]

## CHAPTER III.

### INSTITUTIONS ACCESSORY TO MEDICINE.

I comprehend under this title the hospitals and hospices, the dispensaries and all the establishments which enable the necessitous classes to participate in the relief afforded by medicine. Pagan antiquity has transmitted us no model of institutions of this order, unless one of the gymnasia of Athens, called *Cynosarge*, be called such, in which abandoned children were nurtured and brought up at the public expense, until they reached an age to be able to serve the Republic; or also those retreats which were established by several cities of Greece for the relief of meritorious citizens. Rome never had, either under the Republic or under her idolatrous Emperors, similar establishments. She effected the same thing by frequent distributions of provisions or lands, by the remission of unpaid taxes or some special duties, by the permission accorded to parents to destroy newly-born children whom they were unable to maintain, by the bond of patronage which united patrician to plebian families, and made it a duty of both to succor each other in times of their distress. As to the slaves, they were cared for by their masters as his property, like his cattle or his flocks. The rights of hospitality established between families, cities, and provinces, and religiously observed, assured to travellers subsistence and shelter; but none of these institutions resemble our modern hospitals—nothing of all this bears the character of an establishment destined to receive the afflicted poor.

[*] Dujardin et Peyrilhe, Histoire de la Chirurgie, liv. v, T. iv, p. 61, et sui. According to this author, the first attempt at medical organization in the Roman Empire goes back to the fourth or even the third century of our era; while Cuvier says it only commenced in the fourth century, on the model of the scientific establishment founded in Persia by the Nestorians. Hist. des Scienc. Natur., by Cuvier, edited by M. Magdeleine de Saint-Agy, Paris, 1841, T. i, p. 409.

It is to Christian charity that we owe the foundation of the first alms-houses and asylums.* Modern researches teach us that at the end of the fourth century, Saint Pauline, a Roman lady of illustrious birth, after exhibiting the spectacle of the rarest virtue in the midst of worldly pomp, resolved to retire from society, in order to continue, more uninterruptedly, a life entirely devoted to charity and self-denial. She went to Jerusalem, first cradle of the faith, and theater of the greatest wonders, where she united with other Christian women of the same mind, and formed with them, under the direction of St. Jerome, a pious congregation, who divided their time between the reading of sacred books and the practice of good works.

The faithful, who came in crowds to visit these venerated places, actuated by pious motives, and had established there their residences, were often exposed to severe privations, and though they supported them with stoic fortitude, or rather with the resignation of martyrs, their sufferings could not fail to touch the hearts of their brethren in Jesus Christ. Their lot appeared particularly to excite pity, in regard to their diseases or infirmities. To offer them, in these severe circumstances, an asylum, where they would receive the attention of the kindest charity, united to the counsels of art, was to fulfil for them the offices of Providence; it was, also, in the opinion of those who discharged them, the best means in the eyes of God, of redeeming all the imperfections and weaknesses of human nature. Such a thought was well calculated to excite instinctive compassion in a sex eminently sympathetic. These holy women agreed to execute the project of founding a hospice for the benefit of the indigent sick; and for the purpose of putting the last seal to this work of mercy, they bought a house out of the city, to which they sent the convalescent, to breathe a pure air, and rejoice in the charms of the country, so salutary for persons who are recovering from disease.

In the end, the Emperors, Kings and Califs signalized their zeal in the erection of sumptuous edifices for the relief of human misery, and in bestowing upon them rich legacies. Then dispensaries and benevolent societies were instituted, to complete the work of public charity. In fine, these establishments, which had, at first, only a philanthropic end, turned to the advantage of the Art, and contributed admirably to the progress of the science.

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* Consult, on this subject, Percy et Willaume's Memoir on this question: "Had the ancients public establishments for the benefit of the indigent orphan, or abandoned children, or for sick and wounded soldiers? If they had not, what supplied their place?" Paris, 1813, in 8 vo.

RESUME OF THE GREEK PERIOD.

In the times of Galen, animals were still dissected, and this professor tells us that he made his anatomical demonstrations on monkeys, whose conformation so closely resembles that of man. Sometimes the physicians who followed the armies obtained permission to open the corpse of some barbarian taken from the field of battle; but, ultimately, the practice of dissection entirely ceased, and the conformation of the human body was only studied in books, as the horror of the early Christians against cadaveric researches was more decided even than that of Pagans; and the fathers of the primitive church launched their anathemas against the violation of the mortal remains of man.

This abandonment of anatomy contributed, doubtless, to the decadence of the healing Art; but other causes concurred no less powerfully. In the first rank must be placed the rapid extension of Christianity, which disorganized the Pagan schools, discredited the profane sciences, and ruined their teachers. It engendered in every mind the passion for religious controversy, which excited so much trouble in the rising Church, and hastened, as is known, the fall of the Empire of the East.

In the second place, the limited number of those who continued attached to the culture of the Natural Sciences, enchained by a vicious method, only sought the explanation of the phenomena of Nature in the writings of the ancients; and not daring to advocate any change in regard to the received doctrines, dragged heavily in the rut of the past. Two men, only, Alexander, of Tralles, and Paul, of Ægina, in the lapse of more than four centuries, showed the least originality; the one enriched internal pathology and therapeutics with a few observations—the other added more marked improvements to surgery.

But if the period we have passsed over was unfruitful in scientific progress, it was not so in social amelioration. The commencement of organization that the teaching and practice of medicine received was probably more profitable to humanity than might have been discoveries in the science; for we have seen that charlatanism had reached its acme. A law destined to keep it in check, by requiring certain conditions of capability and good character on the part of the aspirant to the medical profession, responded then, under the circumstances, to an urgent necessity, and such a law is at all times a benefit to society. In fine, the charitable institutions of which this epoch offered to the world the first model, prepared for the future valuable means of medical instruction. The first period, then, of the age of transition, was not entirely lost to the future of science, and especially to that of humanity.

# VI. ARABIC PERIOD.

COMMENCING AT THE DESTRUCTION OF THE ALEXANDRIAN LIBRARY, IN THE YEAR 640 OF THE CHRISTIAN ERA, AND ENDING AT THE CLOSE OF THE FOURTEENTH CENTURY.

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## GENERAL CONSIDERATIONS.

At the epoch when this period commences, the Empire of the West no longer existed. The finest provinces which composed it had been overrun and subdued by barbarous tribes from the forests of Germany. From its ruins had already arisen several independent kingdoms, of which the most considerable were those of the Francs in Gallia, of the Visigoths in Spain, and that of the Lombards in Italy. Justinian, who reigned a century previously, was the last of the Roman Emperors whose arms threw a passing glory over Italy, Sicily, Africa, and Spain, thanks to the skill of some of his generals, and especially to the genius and heroic devotion of Belisarius.

The Empire of the East, attacked at all points, still sustained itself with vigor, though losing daily some one of its supports, similar to a fortress reputed to be impregnable, which, encircled by its enemies, sees fall one after another, the works destined to defend their approach. The Turks had begun to show themselves on the banks of the Danube. The Persians, those eternal enemies of the Roman name, made incessant war upon it, sometimes openly, again covertly. At last, a more redoubtable enemy, and who at this time made greatest havoc of the Empire, had just sprung up in the deserts of Arabia. There a man arose, who was at the same time legislator, prophet, and conqueror, having united under one domination and one worship the tribes heretofore divided and rivals; forming of them a powerful and enthusiastic nation, animated by a thirst of conquest and an ardor of proselytism. Finally, century had not passed since the first preaching of Mahomet, and already Arabia entire, India, Syria, and Egypt, were in the hands of his followers. In 640 or 641, Amrou achieved the conquest of this latter kingdom by seizing Alexandria, its capital. The library of that city, composed of 500,000 volumes, was delivered to the flames, by the order of Omar the Second, successor of Mahomet, and these books, says the historian Abulpharage,

served to heat, for six months, the public baths, which numbered nearly four thousand. Such were the first fruits of the establishment of Islamism.*

Happily the fervor of proselytism abated somewhat among the Mussulman princes, and policy more frequently guided their conduct than religious zeal. The Arab Califs showed themselves, in general, the protectors of the Arts, Sciences and Commerce. Several among them endeavored to collect the debris of the scientific treasures of antiquity, which had escaped the ignorant fanaticism of their predecessors. More tolerant in matters of religion than the Christian Princes of their times, they received, without distinction of country or religion, all the men of merit who took refuge in their States, gave them employment, and recompensed them for their services. On this account, the philosophers and persecuted heretics often sought an asylum among the Infidels, and carried to them, in return, the light of Greek civilization.

Among the sovereigns of this nation, who distinguished themselves by an enlightened love of letters, I will cite, in first rank, Haroun-al-Raschid, the Charlemagne of the East—cotemporary and emulator of the glory of the Emperor of the Francs—the hero of so many Arabic tales and poems, and whose dominion extended over Asia, Africa and Europe, from the borders of the Indus to the heart of the Spanish Peninsula. He embellished, considerably, the city of Bagdad, his capital, and established there public schools, mosques and hospitals. Almamon, his son and successor, made still greater efforts than he, in favor of the Arts and Sciences. He founded the academy of Bagdad, which was one of the most celebrated of the middle ages; and spared no efforts to attract there the most illustrious savans of all countries. He enjoined on his embassadors to buy all the writings of the philosophers and physicians that could be found, and as fast as they were forwarded to him he caused them to be translated into Arabic. The interpreter Honain, who was a Christian, was employed in this work for forty years, and for each book he translated, he was paid, literally, its weight in gold.

The éclat that the dominion of the Moorish Kings shed upon Spain, from the tenth to the thirteenth centuries, is well known. Several cities possessed schools, public libraries and academies. Those of Cordova, Toledo, Seville and Murcia were celebrated in all the West, and students went to them, from all parts of Europe, to be instructed in what were termed at that epoch, the Arts and Sciences of the Saracens. The

* Some modern critics have questioned the burning of the Alexandrian Library by the Arabs; but M. Matter has established that fact on incontestible proofs.

library of Cordova, the capital of the kingdom, embraced more than 224,000 volumes. Thus the literary and scientific scepter passed from the hands of the Greeks and Romans into those of the Arabs. We now proceed to see what became of Medicine, among them.

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# CHAPTER I.

## MEDICINE OF THE ARABS.

### § I.

Rhazes, or Rasis, is the first physician of any eminence, who wrote in the Arabian language. He was of Persian origin, and flourished toward the end of the ninth century and the beginning of the tenth. If we may believe the historians of his nation, who are naturally inclined to exaggeration and the marvelous, he was a universal genius, who had acquainted himself with music, astronomy, mathematics, chemistry, medicine, etc. It is certain that at the age of thirty years he was one of the most distinguished professors of the academy of Bagdad, and that students came from a great distance to hear his lectures. Chosen from among a hundred of the most skillful physicians, to direct the grand hospital of that capital, he displayed in the exercise of his functions an indefatigable zeal, even to his old age. He had attained his eightieth year when the loss of sight compelled him to quit his practice. His reputation was then at its height. It is easily conceived that a man of his acquirements, nurtured in the writings of the ancients, and placed for so many years in a post so favorable for medical observation, must have acquired rare skill in the knowledge and treatment of diseases. He was surnamed the Experienced, on account of his great experience.

Rhazes wrote much on philosophy, medicine, history and chemistry; but the greater part of his works are lost, or are buried in the depth of of some library. We have, from him, two treatises on medicine, the briefest of which, dedicated to the Calif Almanzor, contains excellent counsel on the choice of a good physician. Here are some of the recommendations he has given on the subject: "Study, carefully, the antecedents of the man to whose care you propose confiding all you have most dear in the world; that is to say, your health, your life, and the health and lives of your wife and children. If the man is dissipating his time in frivolous pleasures; if he cultivates with too much zeal the

arts that are foreign to his profession, such as music and poetry; still more, if he is addicted to wine and debauchery, refrain from committing into such hands a trust so precious. He merits your confidence, who, having early applied himself to the study of medicine, has sought skillful instructors and seen much disease; who has united to the assiduous reading of good authors, his personal observations; for it is impossible to see everything and try everything in one's own practice; and the knowledge and experience of a single individual, compared to the knowledge and skill of all men, of all ages, resembles a slender brook of water that flows by the side of a great river."

The greatest work of Rhazes, entitled "Continens," is a collection of extracts, which he compiled from all authors, for his own use. It is divided into two parts, which comprise, together, thirty-seven books, and form an abridgment, somewhat confused, of Medicine and Surgery entire. The first part treats of diseases which attack a particular organ, and commences with the head and finishes with the inferior members. The second part treats of diseases whose seat is sometimes in one part of the body and then in another, as phlegm, erysipelas, wounds, etc., as well as those which affect, or seem to affect, all the economy at once, such as fever, the plague, etc.

The books which make up the Continens, though arranged after a certain order, do not constitute a work fixed upon any uniform plan, whose parts follow each other regularly, but is rather like a collection of notes, extracts and souvenirs, which were probably not designed to be published, or, at least, not in the state in which we possess them. This collection, rich in facts and erudite quotations, is more interesting in a historical than a scientific point of view; for it embraces nothing, or next to nothing, which is not found in Greek authors, unless we except the indications for some remedies, introduced by the Arabs into the materia medica, and a special mention of eruptive fevers, comprised under the name of variola. These diseases having been described for the first time by the Arabian physicians, it has necessarily been concluded that they originated in Arabia, and had not been seen by the Greek and Latin physicians of the previous age. This opinion is certainly easy to sustain, but before admitting it in an absolute manner, let us see what the most ancient authentic documents that we possess, say concerning these diseases. Rhazes expresses himself as follows, in the thirtieth book of the Continens:

"Galen says, in his fourth book, on Habits, that the ancients called a phlegmon a disease in which heat caused an effervescence, as in erysipelas and variola. These affections are caused by the bile. He repeats the same in his treatise on the pulse, and in the ninth book, on

Internal Diseases, in these terms: 'Superfluous matters, which are not converted into blood, become putrefied, and at length attenuate, giving rise to erysipelas and variola.'

"He says again, in his fourth book, on the Pulse: 'The blood becomes so much putrefied in apostema, variola, and eruptions, as to burn the skin.' I affirm, also, that Galen has designated variola by its name, has laid down its special treatment, and it may be inferred from his expressions, that he considered its pustules as indicating a species of crisis."

It is evident from the above, that Rhazes did not consider variola as a new disease, nor peculiar to his country. His testimony is of great weight in the question under consideration; but it would have more, if the passages he has cited from Galen existed in the editions that we possess. I avow that I have not been able to find them, which should not, however, invalidate what he advances; because, the copies which the Arabian physician possessed, differed, probably, very much from ours. Besides, I will add, with Doctor Bruno, a learned Hellenist of the seventeenth century: "This question does not appear to me to have as much importance as it formerly was supposed to possess, and it is not improbable, that the ancients may have designated these diseases by the names of pustules and exanthemata, (*εχθυματων*, vel *εξανθηματων*,) which are so frequently met with in their books." *

The Continens, notwithstanding the imperfect state in which it exists, has been held in great esteem among the Orientals, and even among the Latins. The Arabian writers, posterior to Rhazes, have drawn from this collection as from a common fund of knowledge. For the most part, they have only disposed in a better order, or edited with more elegance and correctness, the abundant material which they found in it.†

§ II.

Haly-Abas, also a Persian, flourished toward the close of the tenth century, about fifty years after Rhazes. He wrote under the title of Almaleki (*opus regium*) a treatise in twenty books, which forms a complete system of the theory and practice of Medicine, and which is extracted, in a great measure, from the "Continens." It is generally argued, in regard to this composition, that it is the best which has proceeded from the pens of the Arabian writers. It has the preference, even now, over the "Canon" of Avicenna, of which we shall speak presently, though the latter had much greater vogue during the middle ages, among the Occidentals.

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* Lexicon Medicum Græco-Latinum. Vide Morbilli.

† G. Cuvier thinks that the Continens was not written by Rhazes, but is a collection of his oral lectures, published by some one of his pupils.

§ III.

Avicenna, surnamed the Prince of Physicians, was born at Bokhara, a considerable city of Khorassan, in the year of grace 980. He manifested, from the most tender age, an extraordinary disposition for the sciences. His ardor for study was so great that he devoted to it entire days, and the greater part of his nights. Having gone to study philosophy and medicine in the university of Bagdad, his talents were soon exhibited. He was received at court, loaded with favors, and elevated to the dignity even of a Vizier. Then, suddenly, he fell into disgrace, was stripped of all his property, cast into prison, and menaced with the loss of his life. After two years detention, he recovered his liberty, acquired anew the consideration of the public and the court, and travelled in various countries. But he did not long enjoy this return of fortune. Excessive labors, and the intemperance to which he surrendered himself, gradually undermined his robust constitution; he died of dysentery, at the age of fifty-six.

Avicenna composed several works, of which the principal is called the "Canon,"* from a Greek word which signifies rule, law. The Canon was, indeed, for five or six centuries, a classic book, and may be said to have been the medical code of Asia and Europe. The professors of the faculties confined their teachings for a long time, to reading it from their desks, explaining, translating, and making extracts or compendiums from it. No author, after Galen, enjoyed so wide and durable an authority in the medical world. Although now dethroned from this high position, my readers will not object, I think, to acquire some knowledge of an author so renowned in former times.

His entire book is divided into five volumes, of which the first two embrace the general principles of physiology, pathology, hygiene, and therapeutics, arranged in conformity with the doctrines of Aristotle and Galen, and may be termed the philosophic part of the science. The third and fourth books contain the description and treatment of all the diseases then known; the last treats of the composition and preparation of remedies. The entire work, from one end to the other, as all other works of this period, is a compilation, neither better nor worse than the Almaleki. This may be inferred from the following fragments.

DEFINITION OF MEDICINE.

"I say that Medicine is a science which gives the knowledge of the conformation of the human body, and its susceptibility of being amended

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* Canon Medicinæ.

or modified for the preservation or restoration of health." This definition is somewhat obscure and refined, but it is nothing in comparison to the commentary which the author makes upon it.

"Some one may say," he continues, "that Medicine being divided into theory and practice, I am wrong in calling it a science, which indicates that it is in the same rank of purely speculative knowledge. I reply that if there are arts exclusively theoretical and others exclusively practical, Medicine, the same as philosophy, is at once theoretical and practical.

"When we admit into a science two branches, the one theoretical and the other practical, we attach to the words theory and practice a different signification from the vulgar acceptation of the terms, which it is proper to explain. We are not willing to say, for example, that one branch of Medicine is devoted to demonstration and the other to operation; but we wish to have it understood that there are two parts in Medical Science—one which treats of principles without having in view their application, and the other which sets forth the rules according to which we should operate. Thus, when it is said that there are three sorts of fevers, and nine temperaments or complexions, the science is rendered speculative; on the contrary, when it is said that we must employ repercussives, refrigerants and incrassants in the onset of an inflamed tumor, then repercussives concurrently with the emollients, and finally, toward the close of the disease, emollients united with resolvents, then we treat of the practical part of the science."*

I avow, that after having read and re-read, with the most scrupulous attention, this passage in the Latin translation, it has appeared to me difficult, if not impossible, to attach to it any clear and precise sense. Avicenna here seems to play upon words; he surpasses, in subtilty, Aristotle and Galen, whom he takes for models, even exaggerating their defects. Besides, the philosophic teachings of the schools consisted at that time only in the subtilties of language. The book, or the author whom they took for a guide, was tortured in a thousand ways; they exhausted themselves in seeking the thoughts of others, in place of thinking for themselves; the struggle consisted in who should refine most a word or a phrase. In this disposition of their minds, they were frequently disposed to regard as sublime and transcendent what was obscure and even unintelligible; so that the philosophic part of the Canon of Avicenna, that which treats of the generalities of science, and which now appears the most defective, seems to have been most admired then, and has contributed most to the prodigious success of the work.

* Canonis, lib. I, fen I, doctrina 1; Venetiis apud Juntas, 1562.

In the second part, which is devoted to the exposition of practical knowledge, the author strays farther still into the labyrinth of theory, which renders the reading of his work difficult and fatiguing; but there are some chapters relative to eruptive fevers, that all judges agree in regarding as the best, and which throw some light on the history of these diseases, in showing the views held in regard to them at the time of their first appearance. I will now give a few extracts about them.

ON VARIOLA.

"The blood manifests, occasionally, an ebullition similar to that which is seen in vegetable juices, producing the disaggregation of their particles. The natural cause of this ebullition is nothing else than the residue of the menstrual blood, which remains in the womb at the moment of impregnation, or a residuum subsequently engendered from food of a bad quality, and deposited there—that kind of food which rarefies the blood, causing its ebullition, until its sound parts predominate, as occurs naturally in the juice of the grape, in a state of fermentation, by which it is converted into a liquor of uniform composition, after having expelled the thick froth and earthy dregs."*

This analogy must appear very gross and ridiculous to many young physicians of the present time, so much is it unlike the doctrine now accredited in the schools; but, after an unprejudiced examination, it will be found to give a very good account of the principal phenomena which characterise eruptive fevers, and particularly variola. These affections, as is well known, attack so universally the human race, as to lead to the belief that they were inherent to our nature; and that each individual contracted the germ of it in the womb of his mother. In the second place, would not the regularity and violence of the febrile symptoms, and the enormous quantity of excrementitial matter ejected from the economy by the eruption, taken all together, seem to prove a depurative effort—a synurgy of the vital forces, for the purpose of eliminating a mischievous humor or element?

This hypothesis, clear, simple, and natural, has been admitted almost without contradiction even down to our day; and so profoundly was the public mind imbued with it, that doctors in theology proscribed innoculation and vaccination as a derogation of the order of things established by Providence; and doctors in medicine repulsed the same means, as tending to retain in the economy a venom whose expulsion it was important to favor. But, even if the above views had been much more rational than was supposed, they did not authorize the consequences

* Canonis, lib. VI, fen. I, tractatus IV, chap. VI.

deduced from them. Indeed, even if it were true that we contain, on coming into the world, the germ of certain diseases, or a proximate disposition to contract them, it need not follow that the germ or the tendency must be left to develope themselves to the point of giving origin to such formidable phenomena, if we have a milder and surer means of destroying such a bad predisposition.

SIGNS OF THE APPEARANCE OF VARIOLA.

"The precursory symptoms of variola are, ordinarily, pain in the back, itching of the nose, fright during sleep, a pricking sensation all over the face, and general lassitude. The face and the eyes become red, the latter being constantly suffused with tears; and numerous inflamed spots appear on the skin. The patient yawns frequently, and respiration is difficult; the voice is hoarse, and a thick saliva is expectorated. The head feels heavy and aches, while the mouth is very dry. The patient realizes, in the throat and chest, a painful constriction; the feet tremble and fall backward. All this morbid train is accompanied by fever."

This graphic tableau does not approach the perfection of those that Aretæus and Alexander of Tralles have left us. No distinction is made here, either in regard to the gravity or the frequency of the symptoms, or of the manner in which they succeed each other. The author does not tell us whether it is necessary for all of them to appear united, or if the apparition of a few of them only is necessary, to prognosticate the imminence of variola. He indicates, no better, the march, characters, and duration of the eruption; nor the phases, so remarkable, of the fever, which attracted particularly the attention of the ancients.

ON THE MORBILLI.

The writers of the middle ages comprised under this term all the febrile exanthemata, such as rubeola, scarlatina, and roseola. "The morbilli," says Avicenna, "are a species of bilious variola. There is scarcely any difference between these two classes of affections, unless that morbilli, proceeding from the bile and a smaller quantity of morbid matter, do not, so to say, affect more than the surface of the skin, nor produce, in general, any elevations which require particular treatment; while variola produces, from its beginning, elevations and pustules. The morbilli are less grave and less apparent than variola; but the signs of their invasion are pretty much the same. However, the irritation of the stomach, difficult respiration, and general inflammation have more intensity in morbilli, while the pain in the bones is less severe. This pain, in variola, is caused by the abundance of the

blood, which distends the vein that runs the whole length of the spinal column, for variola depends upon the quantity of corrupt blood, while the morbilli depend on the quality of it. The variola irruption is gradually developed, while that of morbilli occurs, ordinarily, in a sudden manner."

We see, by the above, that the physicians of those times divided eruptive fevers into two classes only. The first class comprehended, under the denomination of variola, all the eruptions which consist in pimples, more or less prominent, filling up with any liquid—such as pustules, bullæ, and vesicles. The second embraces, under the title of morbilli, eruptions in which the skin is covered with spots, large patches, or pimples, barely salient, and containing no liquid. That was, unquestionably, a very philosophic division, and it still remains in our science. The second species received the name of morbilli, which signifies a little disease or little pest, because the affections which they represent were regarded as less grave, and as engendered by a smaller quantity of morbific matter, than the affections of the first order. Finally, it is to be remarked, that all the authors of that period range eruptive fevers in the class of pests, or epidemic pestilential fevers.

In going back to antiquity, the history of diseases seems to me to offer three distinct phases: in the first, no allusion is made to eruptions; they were considered as epi-phenomena of little importance—a sort of crisis, according to Rhazes; whereas the febrile symptoms, which indicate the state of the vital forces and the intensity of the danger, attracted all the attention of observers. The Asclepiadæ, who even made no account of tetters, lepra, or other infirmities of that kind, might well neglect transient eruptions, which generally leave no trace, or of which the cicatrices constitute, at most, a mere disfiguration. In the second phase, whether eruptive fevers had suddenly taken an extraordinary development, or that they passed for the first time the limits of Arabia, the attention of physicians was more directed to the characters of the eruption, and they distinguished, consequently, two species of it. Finally, the third phase, which extends down to us, in which each genus is divided into several species, founded upon the nature of the eruption.

§ IV.

Albucasis, or Alsaharavius, a native of Cordova, lived in the beginning of the twelfth century. He wrote an abridgment of the theory and practice of Medicine, a mere compilation, in which is found, absolutely, nothing new, unless it be a little treatise on surgery, which terminates the work, as a kind of supplement, and which does him more credit than

all the rest of the work. This last fragment, one of the most curious monuments of Arabian Medicine, includes, among other interesting matter, a description of the instruments then employed in surgical operations, with explanatory figures. The reasons which decided Albucasis to write this treatise on operative Medicine, are worthy of being known. He gives them himself, in the following language:

"After having terminated, happily enough, the work on Medicine which I undertook for your instruction, my sons, I have thought it proper to add to it a small treatise on manual operations, seeing that this part of our science is so much neglected in our country at the present time, that there remain scarcely any vestiges of it. We can only find a few short descriptions of operations in the books of the ancients; they are, however, disfigured by the ignorance of the book-makers; the manuscripts are so faulty, that at every step we are in such doubt as to the sense of the authors, that no one dare enter into the study of surgery. I have, therefore, undertaken this little treatise for the purpose of reviving this most important and useful branch of our Art. I have detailed briefly the methods of operation, I have described all the necessary instruments, and I present their forms, by means of drawings; in a word, I have omitted nothing of what can shed light on the practice. But one of the principal reasons why it is so rare to meet a skillful surgeon is, that the apprenticeship to this branch is very long, and he that devotes himself to it must be versed in the science of anatomy, of which Galen has transmitted us the knowledge. He should know the functions of organs, their shape, and their relations; the number of the bones, and their modes of union; the origin and termination of the muscles, the nerves, the arteries, and the veins. In fine, no one should permit himself to attempt this difficult art without having a perfect knowledge of anatomy, and the action of remedies." *

Observe, that Albucasis, who felt so much the necessity of acquiring extended and precise notions touching the structure of the human body, contents himself, by referring those who desire to instruct themselves in this branch, to the descriptions of the physician of Pergamos. He says not one word about dissections, which leads us to conclude that they were not tolerated in his time, and that he never practiced them himself—at least in an ostensible manner.

He divides his treatise on surgery into three books. In the first, he shows the diseases that require the cautery, the various methods of

* Albucasis, lib. I. The best edition of this work has for a title, Albucasis, De Chirurgia: Arabice et Latine, cur. J. Channing. Oxonii, 1778, 2 vol. quarto.

applying it by fire and escarotics, the instruments which were used, and the cautions that must be taken. Enthusiastic partisan of this medication, he counsels it in a multitude of cases: among others, in spontaneous luxations, and in the commencement of curvatures of the spine. The second book is devoted to the operations which are performed by cutting instruments. The author describes a great number of these, and even some of the most formidable. But among the chapters which have appeared to me the most interesting, I will cite in particular those relative to forcible delivery and the extraction of the afterbirth, the mode of administering clysters, and blood letting. A fact worthy of remark, and which the reading of the book confirms, is, that whenever it became necessary to explore the genitals of the female, the physician must never proceed himself in that research, but always employ the ministry of a *sage-femme*—an uncertain course, which the excessive modesty of one sex, and the unbridled jealousy of the other, imposed on the man of art. The third book treats of the methodic cure of luxations and fractures. The author remarks that this part of surgery was abandoned to men of vulgar and uncultivated minds, and for that reason had fallen into the deepest contempt.

Though he assures us that he had seen with his own eyes all that he reports, it is difficult to believe what he recounts of multiplied conceptions, in his chapter on abortion. He speaks of several women who threw off more than ten embryos in a single *fausse couche*, and of one among the rest, who cast off seventeen! It seems probable that our surgeon, being obliged, under the circumstances, to believe the account of the matrons, shows himself a little too credulous in regard to their statements. I will terminate what I have to say relating to this author, by the following statement of Fabricius of Aquapendente: "Celsus," he says, "among the Latins, Paul Ægineta, among the Greeks, and Albucasis, among the Arabs, form a triumvirate to which I confess I am under great obligations."

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### § V. Retrospective Considerations of the Scientific Progress of Medicine among the Arabs.

During this period the Arabs embraced with much ardor the study of Medicine: they endeavored to translate into their language all the treasures that Greece had amassed on this science, and we owe to them the conservation of some fragments of Greek authors, which have not in any other way come down to us; nevertheless, we possess a much greater number of them, of which the former were entirely ignorant; such, for example, as the writings of Aretæus and several books of

Galen. On the other hand, the Arabs neglected entirely the Latin authors—they did not know Celsus, nor Cœlius Aurelianus—so that they had, on the antiquity of Medicine, less complete notions than we, though placed much nearer the sources of antique knowledge.

Anatomy and physiology, far from making any conquests under Arabian rule, followed, on the contrary, a retrograde movement. As those physicians never devoted themselves to dissections, they were under the necessity of conforming entirely to the accounts of Galen; consequently, they translated his descriptions in the most faithful manner possible. Now, in a work of this kind, the inexactitudes of the translation are always added to those of the original, if the translator does not correct and prevent them by his own direct observations on the subject. It is thus easily seen, how much the anatomy of the Arabs must have been inferior to that of the Greeks, which served them as a model.

Pathology was enriched in the Arabian writings by some new observations, the most important of which we have pointed out. The physicians of this nation were the first, as we have already said, who began to distinguish eruptive fevers by the exterior characters of the eruption, while the Greeks paid but little attention to these signs.

Therapeutics made also some interesting acquisitions under the Arab physicians. It owes to them, among other things, the introduction of mild purgatives, such as cassia, senna, and manna, which replaced advantageously, in many cases, the drastics employed by the ancients; it is indebted to them, also, for several chemical and pharmaceutical improvements, as the confection of syrups, tinctures, and distilled waters, which are very frequently and usefully employed. Finally, external therapeutics, or surgery, received some minor additions, such as pomades, plasters, and new ointments; but these additions were very far from compensating for the considerable losses which it suffered by their abandoning a multitude of operations in use among the Greeks.

## CHAPTER II.

### MEDICINE OF THE GREEKS DURING THE ARABIC PERIOD.

While the Arabian nation was elevated to the summit of the social scale, by power, intelligence, and renown, the Greek nation declined from day to day. Its genius, its courage, all its antique virtues, became gradually weaker, and seemed on the point of extinction. The historian

of Medicine can find only one single name to cite, during a period of nearly seven hundred years, and he is not an original author, and is out of the regular line; but he is an elegant writer, and skillful compiler.

Actuarius, whose true name is John, son of Zacharia, lived at the close of the thirteenth, or beginning of the fourteenth century. He was employed at the court of Constantinople, as his surname, Actuarius, by which he is designated, proves, it being only the honorary title of the physicians of the palace. We have no details of his life, but we know that he has written much, and that several of his works have not come down to us. The most considerable of these, extant, is an abridgment of Medicine, in six volumes, entitled, "On the Cure of Diseases,"* in which is found, absolutely, the doctrines of Galen, presented in a compact manner, and in perfect order. The theory of critical days is explained there in the most lucid manner, and sustained by astronomical hypotheses, very ingeniously combined. It is the first Greek work in which mention is made of the new remedies introduced by the Arabs, such as mild purgatives, syrups, juleps, and distilled liquors. The author, however, says not one word of variola, the morbilli, spina ventosa, and other affections described by the physicians of that nation.

His treatise on animal spirits, divided into two books, is remarkable for the connection of its ideas; it offers the quintescence of the theory of Galen on that subject. After having established the principle that man is formed by the union of two contrary substances, the soul and the body, he demonstrates that the human soul differs from the soul of brutes; that it is an emanation of the Divinity, a simple substance endowed with various immortal and intelligent faculties, insensible in its nature, though capable of realizing pain and pleasure, by the intermediation of spirits, which connect it closely to the body.

These spirits being supposed to be the bond that places the soul in communication with the body, it became very important to acquire exact notions on their nature, origin, and the changes to which they are subject, and the means to prevent or combat their degeneration. Our physiologist explains their formation as follows: the purest juice of the food digested by the stomach is transported to the liver, where it serves for the composition of natural spirits, which are the instruments of the concupiscible faculty of the soul. These are carried by the blood into the lambdoidal vein, one branch of which descends toward the inferior regions, and the other mounts upward to the right ventricle of the heart.

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* De Methodo Medendi, lib vi.

There the spirits and the blood pass into the left ventricle, to be elaborated and changed into vital spirits, which the arteries distribute to all parts of the body. Now, there exists at the base of the brain, an extremely minute plexus of arterial and venous vessels, which is called the *plexus reticulaire*. It is there that the vital spirits contained in the blood, undergo a third alteration, which transforms them into animal spirits. These last are in immediate relation to the soul; by their aid, that immaterial substance perceives the sensations of exterior objects, and executes the most elevated functions." *

I shall not show the anatomical and physiological errors of this theory. I will simply observe, that the admirable plexus in which were elaborated the animal spirits, does not exist in man. But if we admit the hypothesis of Actuarius, which is that of Galen, and nearly all the physiologists of antiquity, we are forced to admit that no one has explained more methodically than he, the functions of the animal economy, and the generation of diseases. He says that health may become affected in two ways: first, when the humors of the body, being too abundant or vitiated in their composition, permit the exhalation of confused vapors, which trouble the lucidity of the spirits, obscure the sensations of the soul, and cause disorder in its operations; secondly, when one of the elementary qualities, heat, cold, dryness, or moisture, is in excess in any part, and causes derangement. It is in this manner that our physiologist appreciates successively the influence of various kinds of food, sleep, watchings, exercise, repose, the passions, remedies, and, in one word, of all hygienic and therapeutic agents. The precepts which he gives, have for their end to conserve the clearness of the spirits, to favor the coction of the humors, and prevent their alteration or superabundance, and to re-establish the equilibrium of elementary qualities. In short, we see that his system is perfectly co-ordinated according to logical rules, but that it is based on gratuitous hypotheses and material errors.

## CHAPTER III.

### MEDICINE OF THE LATINS DURING THE SAME PERIOD.

#### GENERAL CONSIDERATIONS.

At the commencement of this period, the provinces of the Empire of the West present a most painful spectacle. Swarms of barbarians from the forests of Germania and Scandinavia sweep successively over it, pillaging, and killing many of the inhabitants, and reducing the rest to

* De Spiritu Animali, lib. I, chap. VI.

a state of slavery. Everything in southern Europe is changed; laws, manners, customs, language, institutions, monuments! Each generation sees break forth some new and unknown horde of invaders, which comes to demand its share of the booty and renown, leaving a more or less deep trace of its passage over the countries, lately so flourishing, but now ruined. For a moment the genius of Charlemagne, reuniting under the same dominion these diverse races, seemed to resuscitate the Empire of the West, but scarcely had he breathed his last sigh, when the elements of this incongruous empire, having no affinity among each other, became separated. The great vassals of the crown, no longer being held by so vigorous an arm, united at first against it, then against each other; so that for several ages there was nothing but an uninterrupted succession of wars and invasions, without definite results. A species of organization gave some sort of legitimacy to this military anarchy, under the name of feudalism. There was, at that time, neither repose nor security for any one; the weak were trampled under foot, the great were constantly under arms for defense or attack. With difficulty, a few men found, in the pale of the Church, a little calmness and leisure to devote themselves to the study of theology and ecclesiastical law. Profane letters, as well as the natural sciences, had fallen into the most complete neglect.

However, toward the end of the eleventh century, the enthusiasm of the Crusades offered a new aliment to the turbulent ambition of the Christian Barons. But while the higher and inferior lords of western Europe carried their bellicose humor to the East, the people, though always oppressed, began to breath freer; a few States recovered their independence; the reign of law was slowly established; municipal institutions were organized and consolidated, and establishments consecrated to public instruction were multiplied and acquired importance. Finally, in the course of the thirteenth and fourteenth centuries, the darkness which covered the face of Roman Catholic Europe, began to give way; a few men of talent, and even genius, appeared on the horizon of letters and science, though all is in obscurity around them—they shone in the midst of their ignorant cotemporaries, like the stars that glow in the firmament before the appearance of Aurora. Such, in letters, were Dante, Petrarch, Boccacio, whose writings recall the good taste and purity of the happiest ages; such, in mathematics, was Leonard of Pisa, who was the first in Europe to understand and employ the Arabic figures and algebraic characters.*

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* Cuvier attributes the honor of this importation to Gerbert, a learned Benedictine of the tenth century, who wore the tiara under the name of Sylvester II.—His. des Scien. Nation.; Paris, 1841, t. I, pp. 396.

The physical sciences, also, had representatives at that epoch, when the questions of scholastic philosophy and theology had, almost alone, the privilege of engaging the human mind.† Roger Bacon, by the force of his genius, was in advance of the scientific reform which was accomplished three centuries later. He attempted to introduce the experimental philosophy; and he succeeded so well in communicating to his auditors the convictions with which he was penetrated, that they subscribed, in equal shares, the sum of two thousand pounds sterling, to provide for the expenses of his experiments. It was, unquestionably, money well employed, and served to make a prodigious number of discoveries for such an age. Thus, it is said, that Bacon knew the properties of convex and concave glasses, and was the first to conceive the idea of making microscopes and telescopes. His astronomical observations led him to demand a reform of the calender, which was executed three centuries later, under Gregory XIII. He had, also, some knowledge of gunpowder and its effects; in short, he rejected the physics of Aristotle. So much boldness and superiority could not fail to draw down upon him persecution; he was condemned to imprisonment for life, by the chief of the Grey Friars, and to live on bread and water; but he was brought forth in 1266, on the demand of Pope Clement IV. He left a large number of works, of which several still exist, but only in manuscript, the friars having always forbidden their publication, because they believed them to be tainted with magic and sorcery.

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### ART. I. THE MEDICAL ORGANISATION OF THE WEST.

We have seen what was the medical organisation of the Roman Empire, down to the seventh century. The palatine archiaters, attached to the palace of the prince; the popular archiaters, forming in each city a college, charged with the sanitary police, and the instruction and and examination of aspirants to the practice of medicine, and required to give gratuitous attention to the afflicted poor; such is the sum of the positive knowledge we possess on the subject, down to the destruction

† The philosophers were at that time divided into two camps, under the names of *Realists* and *Nominals*. The first believed with Plato, that ideas are self-existent, and independent of the mind—that they are veritable entities; the second, on the contrary, affirmed with Aristotle, that general ideas are pure abstractions, which our minds form by the aid of sensations, and which, without these, could never exist. These two sects kept up a very active war; and as they called to their aid the civil and ecclesiastical authority, the result was persecution against each other, according as either party had momentarily the power.

of the school of Alexandria. It is probable that after the ruin of this celebrated school, the same medical organisation subsisted in those provinces which continued to form a part of the Greek Empire of Constantinople.

In those countries subjected to Arab sway, we are ignorant of what rules existed regulating the practice of Medicine. We know, only, that schools and academies were founded in several cities, for the teaching and perfection of the art; but we have nothing positive on the interior regimen of the schools and academies, or the degrees that were conferred by them, and the manner in which they ascertained the capacity of the aspirants to academical titles. These countries, as we have already said, did not long enjoy an enlightened and liberal government. From the moment that they fell under the yoke of the Turks, they lost the greater part of their scientific institutions, which have not since been resuscitated; and, if one may judge by what still exists to-day in those unfortunate countries consumed by the leprosy of ignorance and despotism, the most complete medical anarchy followed the old organization.

In Europe, things took a different course. At first, the invasion of the barbarian threw every thing into disorder and confusion. The Christian states of the west presented, during three or four centuries, a chaotic condition. The sovereigns of these states, constantly occupied with the care of self-defense, or the desire of usurping the heritage of their neighbors and relatives, scarcely dreamed of bestowing upon the people useful laws and institutions; or, if any among them wished to labor for the happiness of their subjects, all their plans were paralyzed by a multitude of obstacles that prevailed within as well as without. In the midst of these circumstances, the ecclesiastic schools, placed under protection of the bishops, preserved, alone, a course of literary and scientific instruction. In the time of Charlemagne, the colleges of the cathedrals and some monasteries taught Medicine, in a limited way, under the name of physics. In this way, all the liberal professions, and the practice of Medicine in particular, fell into the hands of the clergy. We see priests, abbots, and bishops become the physicians of kings. The monks of Mount Cassin, of the order of St. Benoit, enjoyed, for a long time, a great reputation for skill in Medicine. Among others are cited Berthier, abbot of this convent, in the ninth century; Didier, who wore the tiara toward the close of the eleventh century, under the name of Victor III.; and Constantine, called the African, of whom I shall speak presently, when on the subject of the school at Salerno. Among the number of ecclesiastics who distinguished themselves by their knowledge of Medicine, from the ninth to the eleventh centuries, must be mentioned Hugues, abbot of St. Dennis, who was physician to the king of France;

Didon, abbot of Sens; Sigoal, abbot of Epernay; Milo, archbishop of Bénévent, and others. Finally, several religious orders of women ingratiated themselves, also, in the practice of Medicine, and Hildegarde, abbess of the convent of Rupertsburgh, near Bingen, is mentioned as the authoress of a treatise on materia medica.*

From the ninth to the thirteenth century, the Jews shared with the clergy the monopoly of the healing art. The knowledge that several of them had acquired of the Arabic tongue, by the commerce they held with the Saracens, facilitated their study of the medical works of that nation, which stood, at that time, at the head of civilization; also, notwithstanding the canons of the church which forbade the Israelites from prescribing or administering remedies to a Christian, they were obliged to call upon them in time of need, and the Jew had access not only to the courts, but also to the palace of the Roman pontiffs.

The education of these Christian or Jewish medicasters, clergy and laiety, embraced generally but a very few things; it consisted, often, in the possession of some recipes and the knowledge of a few symptoms. The extreme rarity of books, and the absence of capable professors, rendered a good medical education entirely impossible. We may form an idea of what was, at that epoch, the teaching of Medicine, when we learn that, in the thirteenth century, John of Gaddesden, the author of the *Rosa Anglicana*, an informal collection of odd formulæ, was the oracle of the University of Oxford, the doctor *à la mode* of the court of England; and that, about the same time, Bernard de Gordon, the author of *Lilium Medicinæ*, a work of the same character of the *Rosa Anglicana*, shone in the first rank among the professors of Montpelier. Guy de Chauliac thus speaks of the work of Gaddesden; "Finally appeared a pale English rose, which was sent to me, and I perused it. I did hope to find in it sweetness of perfume; but I only found the fables of the Spaniard Gilbert and of Theodorus."† M. Malgaigne esteems this critic too severe; but he does not show himself very indulgent in regard to a man who dishonored his ecclesiastical character, and his character of physician, by the juggleries of the most impudent charlatanism; of a man who took pleasure in displaying the shame of his most illicit gains. The following among his acts is one that will excite most hilarity: he speaks of having sold, at a high price, to the barber-surgeons, a recipe for a preparation of green frogs, and boasted of having duped them.‡ What confidence could this vender of secret remedies

* See Histoire de la Medicine, by Sprengle, translated by Jourdan, T. II, p. 351, et suiv.

† La Grande Chirurgie de Guy de Chauliac, restored by Laurent Joubert, Rouen, 1632, p. 10.

‡ Freind, Hist. Med., Paris, 1728, quarto ed.

inspire?—this constant puffer of a multitude ofridiculous proceedings, to whom all means of gaining money appeared equally good.

No law, no rule of public administration, had for its object to insure the capacity of individuals who aspired to the medical profession. Each one at his risk and peril, entered upon the cure of diseases; also, besides the priests and the Jews, who stood at the top of the scale, there was still a multitude of healers and practitioners of the lowest order, such as bath keepers, barbers, and resuscitators, and even a few women. The morality of this vulgar medical mass was on a level with its knowledge, as is proven by a law of Theodoric, king of the Visi-Goths, which code was in force in the greater part of the West, from the sixth to the twelfth century. This law says that no physician could bleed a woman, or a daughter of noble birth, without the assistance of a relative or a domestic, and in case of contravention, he should pay a penalty of ten sous, *quia difficillimum non est ut in tali occasione ludibrium interdum adhærescat.* When a physician is called to treat a disease or dress a wound, it is necessary, immediately after having seen the patient, to give security and agree upon the price of his attention. If he happen to harm a gentleman, he must pay a forfeit of one hundred sous, and if the patient died from the effects of his operations, he should be handed over to the relatives of the deceased, who could do with him whatever they pleased. If in any way he crippled a serf, or caused his death, he was held accountable for the restoration of another to the lord.*

We see by the above guarantees of knowledge and morality which were required of the aspirant to the medical profession, that the legislator held in constant suspicion all who devoted themselves to its practice. It is possible, as M. Malgaigne observes, that these severe restraints were only applicable to surgical cases, the practiee of which was at that time abandoned to individuals of the lowest conditions, against whom the law might and should show itself suspicious; while the practice of internal medicine formed part of the privileges of the clergy, who alone were the depositories of letters and science, and enjoyed the highest consideration. It is not probable that the secular power ever dreamed of handing over to the relatives of the dead, a man protected by the title of clergyman.†

It is probable that it was from this time, i. e., from the seventh century, that Medicine was separated from Surgery. This change, which was contrary to the views of the greatest masters, and which in itself

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* Lindenbrog, Cod. Leg. Antiq. Wisigoth, lib. xi, tit. i. Sprengel Hist. de la Med., translated by Jourdan. Paris, 1815, t. II, p. 49.

† Œuvres completes d'Ambrose Paré. Paris, 1840, t. I, introduction, § 1.

is not very rational, was not the effect of any civil law, but the gradual result of custom caused by the general prohibition against the spilling of blood by ecclesiastics. Nevertheless, it appears that the practice of Medicine, though thus separated from the practice of surgery, led to such irregularities in the manners and discipline of the clergy, that from the twelfth century, we observe the councils and popes interdict its practice under the most severe menaces, by men in holy orders and bound by monastic vows, and yet this prohibition was often violated, as is attested by the frequent reiteration of this law.*

In the course of the twelfth century, the secular authority began also to be moved by the abuses which had entered into the practice of Medicine. Roger, founder of the kingdom of Sicily, and one of the greatest men of his time, seems to have been the first among Christian princes of the Middle Ages, who occupied himself with this subject. In 1140, he published an ordinance, by which every man who wished to devote himself to the practice of Medicine in his State, was obliged to present himself before the magistrate, to obtain their authorization, under pain of imprisonment and the confiscation of all his goods. From this time, many other sovereigns followed his example, and established ordinances to regulate the practice of Medicine. In the end, the medical organization was completed by the institution of faculties and university degrees.

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### ART. II. SCHOOL OF SALERNO.

The origin of this school, so celebrated in the Middle Ages, is somewhat obscure. The common opinion carries it back to the epoch of the destruction of the library of Alexandria, by the Arabs. It is pretended that after this mournful event for the sciences, the professors and phycians, who were very numerous in that city, were scattered in different countries; that some sought refuge at Salerno, where they laid the foundation of a medical school, which grew rapidly. It had already a reputation, as early as the eighth century, but the epoch of its greatest splendor was from the tenth to the thirteenth century.

Several circumstances concurred, at this time, to secure to it extraordinary éclat: first, the number and skill of its professors, who were unquestionably the most capable in all Christendom; in the second place, the unexceptional situation of the city of Salerno, lying in the route which travelers had almost necessarily to follow in passing from Europe to Asia, and of the fleets that transported the armies of the

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* Sprengel, Hist. Med., by Jourd., t. II, p. 350.

Crusaders. This city offered to pilgrims and warriors a safe haven; a delicious and salubrious climate; all the means and recreations which most contribute to the establishment of health and the oblivion of every species of fatigue and suffering which they had encountered.

The reputation of its medical school attracted those who had diseases or wounds difficult of cure, from all parts of Europe. Robert, Duke of Normandy, the son of William the Conqueror, stopped there on his return from the Crusades, to be treated for a wound of the arm. John of Milan composed for his benefit a summary of the hygienic aphorism of the school, which was published in 1100, with the title of "Dietetic Precepts of the School of Salerno," and made much noise in the world. This compilation was honored by several commentaries, the most famous of which is that of d'Arnaud de Villeneuve. It begins as follows:

"The faculty of Salerno wrote to the king of England as follows: If you wish good health, banish despondency and avoid anger. Drink but little wine; eat light suppers, and do not disdain to take some exercise after meals. Do not sleep during the day. Do not retain too long the urine and evacuations from the bowels. By observing these precepts, your life will be prolonged."*

Among the professors of the school of Salerno, the most illustrious was Constantine of Carthage, surnamed the African. He flourished during the latter half of the eleventh century. While yet young, the desire for knowledge urged him to travel. He passed through Arabia, Persia, India, Egypt, Ethiopia, and all the countries where any knowledge could be gained. On his return to his country, in place of the honors he had a right to expect, he found only persecutions; he was looked upon as a magician, and came near being put to death, but escaped and took refuge at Apulia, near the Duke Robert Guiscard, who made him his secretary. Afterward, he was adjunct professor in the College of Salerno, and taught Medicine for some time in that capacity. Finally, disgusted with the world, he retired to the monastery of Mount Cassin, where he found a safe retreat, where he could indulge, without distraction, in his penchant for study. While there, he translated and compiled a great number of the medical works of the Greeks and Arabs, compilations extremely useful at an epoch when the originals could not be read, and which

* Anglorum regi scripsit schola tota Salerni:
Si vis incolumen, si vis te reddere sanum,
Curas tolle graves; irrasci crede profanum.
Parce mero; cenato parum; non sit tibi vanum
Surgere post epulas. Somnum fuge meridianum.
Non mictum retine, nec comprime fortiter anum.
Hæc benè si servas, tu longo tempore vives.
*Regimen Sanitatis Salerni*, Paris, 1493.

contributed powerfully to popularize, in Europe, the letters and science of the East. Though written in barbarous Latin, the translations of Constantine served, in a very efficacious manner, for the propagation of medical knowledge in those ignorant times.

In the course of the thirteenth century, the Emperor Frederic II., grandson of Roger, issued an edict, in virtue of which no individual could practice Medicine, in the Kingdom of Naples, who had not been examined previously, and created a master, by the College of Salerno. To effect this, he must study logic three years, and pursue a course in Medicine which must continue—(including surgery, which made a part of Medicine)—five years, according to the interpretation of Sprengel, and two years only according to that of Malgaigne.* However this may be, to have been admitted to an examination at the end of term, the student must furnish a certificate of his legitimate birth, and that he had attained his twenty-fifth year, or his twenty-first according to another version; after which he was examined, publicly, on the therapeutics of Galen, the first book of Avicenna, and the aphorisms of Hippocrates. These proofs being satisfactorily fulfilled, he took an oath to be faithful to good conduct, to submit to the rules of the profession, to give gratuitous attention to the poor, and not to share in the profits of the apothecaries. His diploma was afterward to be confirmed or legalized by an officer of state; still he could not enter fully into practice, but was obliged to continue a year longer under an experienced physician.

He, who wished to devote himself exclusively to surgery, was obliged to follow the teachings of the faculty for one year only; but he must devote himself, above all, to acquiring anatomy, without which, said the act, he could not safely perform any surgical operation, nor direct the subsequent treatment. Afterward, he underwent an examination which gave him authority to practice, and take the title of master. Thus, says M. Malgaigne, there were two masterships: one, which gave the right to practice medicine and surgery; and the other, which conferred the right to practice surgery only.

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### ART. III. ON THE ORIGIN AND GROWTH OF UNIVERSITIES.

#### § I.

In the times of Charlemagne, as before observed, each cathedral possessed a school, where writing, arithmetic, singing, theology, and sometimes, also Medicine, were taught. The Episcopal College, of Paris, had

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* Lindenbrog, Constit. de Naples et de Sicile, liv. III, chap. XXXIV.—Sprengel, Histoire de la Medicine, sec. 7, chap. II, T. II, p. 363.—M. Malgaigne, Œuvres d'A. Parè, introduc., § 4, p. 30.

medical teachers, who gave advice and dressed wounds before the portals of Notre Dame, or even in the interior of the church. The same thing was done in several other cities; but when the medical profession had been declared incompatible with the sacerdotal office, by a series of councils, the popes, in order to preserve the high jurisdiction which they had exercised from time immemorial over the medical corps and the bar, erected certain Episcopal schools into universities, combining at once instruction in philosophy, theology, law, and medicine, or only some one of these faculties. Thus were created during the thirteenth century, the most of the great universities of Christian Europe; among others, those of Bologna, Padua, and Naples, in Italy; those of Paris, Montpelier, and Toulouse, in France; those of Valencia and Tortosa, in Spain, and that of Oxford, in England. Pope Innocent III., issued a bull which guarantied the professors and students of Paris from all excommunication which should not proceed directly from the Holy See. Other bulls confirmed and extended these immunities. The kings of France, themselves, assumed the honor of conferring special privileges upon the universities of their capital, to such an extent that very soon the members of the university formed in the midst of Paris a second city, having laws, customs, police, inhabitants, and magistrates, differing from those of the rest of the city. "All science," says M. Malgaigne, "appertained to the clergy, and teaching, though removed from the cloister, did not become less Roman Catholic. These new clergymen, connected to the Chief of the Church by their oaths and privileges, were unto him a numerous and powerful militia, and while by the clergy proper the popes reigned over the consciences of the people, by the clergy of the universities they reigned over their minds. Who can be astonished, then, that they bore impatiently the fact of not being able to concentrate, also, all other powers in their hands?"* Nevertheless, we must do justice to the pope, the monks, and the Catholic clergy in general, who prepared the intellectual movement of modern Europe. The universities, by associating together studious men, offered them the opportunities and means of mutual instruction, excited their emulation by the prospect of honors and rewards—concurred, in short, in a very efficacious manner to elevate Christian civilization, above all others.

The great effects of these liberal institutions were not immediately realized, it is true; it required several generations to develop their results, and ripen their fruits. On this account, the end of this historic period, though less barbarous than its beginning, has transmitted to us but very few writers worthy to arrest our attention. The men

* Œuvres d'A. Paré, introduction, p. 28.

who made themselves a reputation in the sciences, and especially in Medicine, shone less by the merit of their works, than by the love for instruction, and by the zeal which they displayed in its research and propagation. To-day, when literary riches abound, we can with difficulty form an idea of the price they cost our ancestors. We are astonished to see them undertaking expensive, as well as wearisome voyages, without any encouragement or hope of remuneration, to obtain some manuscript, or hear some renowned professor. Such was the devotion and zeal of the greater part of the authors of whose lives and labors we now proceed succinctly to speak.

§ II

The first who presents himself is Gérard de Cremona, in Lombardy. "You will seek in vain," says M. Malgaigne, "the name of Gérard in the historical medical dictionaries; he has been rejected even by many others, and yet there are few sciences which do not owe him some gratitude. A man of study and piety, he had ardently perused all that the Latin authors could teach him, but not having been able, in Italy, to procure the Almageste of Ptolomy, he determined to go in search of an Arabian translation, at Toledo. He was not acquainted with the Arabic, but he learned it, and armed with this powerful resource, which none of the Occidentals since Constantine the African had possessed, he could not see before him so many Arabic works on all the sciences, without feeling an intense desire to transmit them to the Latins, as to a cherished heiress, says his naive biography, and the rest of his life was occupied in translations. Among a mass of his translations are found those of some of the treatises of Hippocrates and Galen; the work of Serapion, the books of Rhazes to Almansor, the immense canon of Avicenna, and the treatise on surgery, by Albucasis. He died at Cremona, in 1187, at the age of seventy-three, and left all his books to the convent of Saint Lucy, in which he was buried."*

*William of Salicet* had a less wandering life. Born at Plaisance, in the first years of the thirteenth century, he was professor, at first at Bologna, afterward at Verona. It does not appear that he ever quitted Italy. Though he has written on Medicine and Surgery, it is especially as a surgeon that he is worthy of the recollection of posterity. He is the first, in that period of ignorance, who wrote on that branch of our Art from his personal experience, and who has not always followed, blindly, the opinions of his masters. He died in 1277 or 1280.

*Arnold de Villeneuve* was a man passionately fond of the sciences. He studied ten years at Montpellier, twenty years at Paris, and visited

* Œuvres of d'A. Paré. p. 27.

all the universities in Italy. He passed into Spain, to be instructed in the Arab works. He wrote on medicine, theology and chemistry, and enjoyed considerable reputation among several sovereigns and popes. He was especially renowned as a chemist. "We owe to him," says M. Dezeimeris, "the discovery of the spirits of wine, of the oil of turpentine, aromatic waters, and some other preparations. He introduced into medicine the use of chemical remedies. His death is stated to have occurred in several ways; but it is generally believed to have taken place in 1313, when he went from Sicily to Avignon, to attend upon Clement V., who was sick."†

Lanfranc was from Milan, and studied under William de Salicet. All that we know of the early years of his life, is, that he practiced surgery in that city at the time of the greatest dissensions of the Guelfes and the Gibelins. The party to which he was attached was the weaker. Matthew de Vincenti, chief of the other party, exiled our surgeon. He went to seek an asylum in France, and stopped first at Lyons, where he remained several years, and where he wrote his Minor Surgery. In 1295 he went to Paris, and, at the instance of John Passarant, dean of the faculty of Medicine, he opened a course on Surgery, which had great success. It was then that he achieved his Great Surgery, which was published in the following year. We do not know the period of his death, but from the way Henry de Mandeville speaks of him in 1306, we suppose he was not then alive.

"We are, unhappily, compelled to add," observes M. Malgaigne, "that in the hands of Lanfranc, and much less, doubtless, from his fault than by that of his age, Surgery began to decline. We have seen that from the times of Brunus (who practiced in Padua in 1250), the barbers did the scarrifying and bleeding; from the times of Lanfranc there were others who applied leeches, and what is much more serious, even cauteries. The women, who meddled themselves with surgery, in all these operations competed with the barbers. On the other hand, the lay-surgeons held themselves as the rivals of the clergy. Lanfranc, who had inherited for them all the aversion of his master, had more than one contest to sustain with them in his practice, and if they had less success, they had more boldness. The clinical surgeons began to regard the operations as too much beneath them; Lanfranc, who deplored these whims, and who declared that he sometimes bled with his own hands, never, however, operated for ascitis, hernia, cataract or stone."‡

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† M. Hœfer denies all the chemical discoveries attributed te this physician, and proves that they were anterior to him. Hist. de la Chimie; Paris, 1842.

‡ Œuvres de A. Parè; Paris, 1840, Introduc., § 6, pp. 46.

John Pitard was, in 1306, surgeon of the King of France, Phillip le Bel, and, also, the sworn surgeon of Chatelet. He has left no writings on his art; but he is regarded as the founder of the surgical school of St. Come and St. Damien, which occupies so eminent a position in the surgical annals of France. This college, which was, in 1311, only a little brotherhood of lay-surgeons, insensibly increased in importance, as the result of the obstinate struggle which they sustained, on one hand against the faculty of medicine—on the other against the barber-surgeons. M. Malgaigne, who has unravelled, with the patience of an erudite, the origin and title of this community, proves that at first its importance was greatly exaggerated by its historians.* Afterwards, on another occasion, looking especially on the facetious side of its long quarrels, he has traced their various turns of fortune in the comic vein of Aristophanes, or of the chorister of Lutrin.†

Guy de Chauliac, the most famous of the physicians and surgeons in Christendom, during the Arabic Period, was born in a village of the diocese of Mende, in Gévaudan. "He was already clerk," says M. Dezeimeris, "and at least twenty-five years of age, in 1325. In this way we fix the epoch of his birth at the end of the thirteenth century. It is supposed that he studied the humanities in the College of the Cathedral, at Mende, which enjoyed, at that time, a great celebrity. He studied medicine at Montpellier. Among the masters he heard, he cites with gratitude Raimond de Molieres, Pierre de Toulouse, Pierre d'Horlac or d'Aurillac, and Master Barthelemy, or Barthomieu, called, also, Bertrucius or Bertrand, in the copies printed of the surgery of other authors." It is probable that Guy followed the course of the faculty of Paris; for he recounts, himself, how a shoemaker of that city removed a corn from his foot. He studied, also, at Bologne, where he saw several dissections made.

"Little satisfied with the science drawn from the schools," adds his biographer, "Guy de Chauliac made himself familiar with the writings of the ancients, and acquired an erudition infinitely more extended than any of his cotemporaries. He practiced in various cities, but fixed his residence for a longer time at Lyons than elsewhere. He entered the service of Pope Clement VI., at Avignon, where the Holy See was transferred—at latest in 1348. We have reason to believe that he enjoyed the same honor under Innocent V., at the death of whom Guy de Chauliac was welcomed by Urban V., his compatriot, who was crowned Pope in 1362; he became his chaplain, *commencal* or reader in his chapel. We know not the length of time he enjoyed that dignity. All our knowledge on

* Œuvres d'A. Paré, § 16, pp. 120.

† See his eleventh letter on the History of Surgery.

this subject comes from himself; and it does not appear that he wrote anything after 1363, at which time he published his Surgery.*

He composed several works, which are enumerated by M. Malgaigne, but the only one which requires our attention now, is his Great Surgery, which he calls *Inventory*, to signify, as he explains, that it contains the succinct exposition of all that was essential, that had been taught up to that time, on each branch of the art. In his singular chapter—*capitulum singulare*—which seems as an introductory, he glances at the progress of surgery since Hippocrates. He names a great number of Greek, Arabian, and Latin authors, and of all those whose writings have reached us, he omits only Celsus and Aetius. He cites some Arabian physicians of whom we have no knowledge at present. No one has known better than he, how to unite respect for the ancients with justice toward moderns. "The sciences," he remarks, "are created by successive additions; the same man can not lay the foundation, and perfect the superstructure. We are as children carried on the neck of a giant; aided by the labors of our predecessors we see all that they have seen, and something besides." In the same chapter, in tracing the character of a surgeon, he recommends that he be learned, expert, ingenious, and *bien morigéné*, that is to say, following the interpretation that he gives himself of the last word: that he be bold where he is sure, and timid when in doubt; that he avoid bad cures and practices; be gracious to the sick; generous to his companions; wise in predictions; chaste, sober, pitiful, and merciful; not covetous, nor an extortionate of money, but receive a moderate fee, according to his labor, the abilities of his patient, the character of the issue or event, and his own dignity. "Never, since Hippocrates," exclaims M. Malgaigne, "has Medicine heard a language stamped with such nobility, and in so few words."

The entire work is divided into seven treatises or books. The first is devoted to anatomy, but contains nothing new; the description he has given of the body is drawn entirely from Galen, or some other nearer and less pure source. But he insists on the necessity of dissections, and states that the practice had been introduced for some time, in the school at Montpellier, of making anatomical demonstrations on animals. He proposes, also, to make use of the corpses of executed criminals. He speaks of drawings representing parts of the human body, which had been drawn by the direction of Henri d'Hermondaville, or Mondeville. As to his surgery proper, he extracted it from Galen, Oribasius, Paul d'Ægina, Rhazes, Avicenna, Albucasis, Roger, Roland, and other writers, but he selects from them with discretion; he discusses,

* M Dezeimeris Dictionnaire de Medicine, article Guy de Chauliac.

judges, chooses, and makes summaries of their opinions and methods. "At that period," says M. Dezeimeris, "an inventor would have rendered less important services than a judicious compiler. Books were of an extreme rarity, and from their price within the reach of but few surgeons; to unite them nearly all in one, to collect all that there was useful, so as to form but one small volume, was to place the science within the reach of all fortunes, to give facility for learning to him who was doomed to ignorance by the scarcity of books, and to create, not surgery, it is true, but surgeons."

In the second book, which treats of abscess, our author gives the word a more extensive meaning than it has at this time. He designates by it every species of tumor, excressence, and swelling, partial or general. "The great abscesses," he remarks, "are, according to Galen, considerable tumors, which are developed in fleshy parts. The little abscesses are, according to Avicenna, eminences, pustules, and pimples, which appear on the surface of the skin." He divides abscesses into hot and cold. The hot are caused by too much blood, such as the phlegmon, anthrax, gangrene, and pustules: sometimes from the bile, as erysipelas, vessicles, and effervescences. Among cold abscesses he classed œdema, tympanitis, dropsies, scrofula, scirrhus, and cancer.

The practice of Guy de Chauliac, though timid, was more active than that of Lanfranc. He never cut for stone; he left to the travelling surgeons that operation, which he desribes according to the Arabic writers, and as he had seen it performed; but he incised the abdomen, in ascitis, and did not hesitate to attempt the radical cure of hernia; he speaks of cataract like a man thoroughly acquainted with it, and who had operated.*

The plague which raged during the fourteenth century in all parts of the known world, and which depopulated the globe, according to historians, of a fourth of its inhabitants, appeared twice in the city of Avignon, at the time Guy resided there. He acknowledges, ingenuously, that he desired to fly, like others, that theater of death; but was prevented by the shame of the thing. *Et ego*, he says, *propter infamiam, non fui ausus recedere.* He remained at his post, continuing to visit the sick, and giving them consolations as well as counsels, notwithstanding the uselessness of remedies. Being attacked himself, he saw all abandon him and leave him for dead. In this frightful position, he preserved enough presence of mind, to follow the progress of his disease, analyze his sufferings, and give a description of them, worthy of Hippocrates.

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* M. Malgaigne, Œuvres d'A. Paré.

Here finishes the list of men rendered eminent by services to medical science during the Arabic period. The work of Guy de Chauliac became very soon the surgical code of Europe; translated and commented upon in all tongues, and reproduced under different forms, it was for a long time classic, and still preserves its interest, as representing the state of science at the close of the middle ages. He has written, moreover, in a clear, concise, and even picturesque style, very superior to the barbarous Latin of most of the writers of his time.

## CHAPTER IV.

### ACCESSORY INSTITUTIONS.

Charitable institutions were astonishingly multiplied during this period, as well among the sectators of Mahomet as in the Christian states. By the side of each mosque, the same as by each cathedral, there were usually a school and a hospital, endowed with more or less munificence by emperors, califs, kings, bishops, or the opulent, who hoped to buy a redemption from their sins by pious liberality, and secure an eternity of happiness. A great number of religious communities were established during the middle ages, to give succor to the necessitous sick. The most considerable were the orders of St. Mary, St. Lazarus, the Knights of St. John of Jerusalem, and the Daughters of God. In the end, some of these orders departed from their primitive undertakings, and became so rich as to excite the covetousness of sovereigns, and so powerful as to resist their authority. More than once, the laxity of morals and the spirit of discord entering into these religious societies, rendered their reform or even their suppression necessary; but in their origin all had an aim for charity and sanctification.

The charitable zeal for the sick was never more fervent than at this epoch; we see princes, bishops, and popes give an example of heroic devotion, in dressing, with their own hands, the ulcers of the leprous, of which no one at that time had doubted the contagious properties; never, besides, were the occasions for their exercise more frequent. The leprosy that the crusaders had contracted in the Orient, spread with frightful rapidity; misery, uncleanness, and the want of hygienic care had multiplied, to the last degree, cutaneous diseases of every species; ignorance and fear aggravated still more the evil, by confounding with the leprosy affections of a nature less formidable; so that, in the thirteenth century,

it was estimated that there were not less than two thousand leprous persons in France, and nineteen thousand in Europe entire.

The excessive severity of a mass of ordinances enacted against the leprous, proves how great was the terror which that hideous disease inspired. They were forbidden to enter the cities; if they encountered any one in their walks, they were compelled to turn aside, so that their breath should not taint them. If a healthy person was convicted of having touched a leper, or any thing which they had been using, he was immediately separated from society. Lastly, the least infraction of any of these rules entailed severe punishment, often even that of death. What superhuman courage, what abnegation did it not require in those who devoted themselves to the service of these unfortunates!

Another institution, which would tend more effectually than coercive measures to the diminution of these cutaneous diseases, was that of public baths. They were established in nearly every city, and the number increased to such an extent that, in the fifteenth century, the bathers formed in Paris a powerful brotherhood.* Jaques Despars, physician to Charles VII., and one of the most renowned professors of the faculty, having spoken too openly against the abuses of public baths, was obliged to quit the capital to avoid the persecutions of that brotherhood.

### RESUME OF THE ARABIC PERIOD.

Three grand facts predominate in the history of this period, and reflect, to some extent, the progress of the human mind.

1. The Arab nation, until that time obscure, and almost a stranger to the progress of civilization, passed rapidly from a demi-savage to the first rank of polished nations. After having, for several years, carried over the conquered countries the fury of a religious vandalism, they embraced, with enthusiasm, the culture of the muses, and endeavored to repair their early ravages, by collecting the debris of the literary and scientific movements of Greece. Medicine is one of the sciences which they cultivated with most zeal and success, though they added but little to the treasures amassed by the genius of the Greeks. Very soon a people more barbarous and unknown, issued from the deserts of Tartary and subjugated, in their turn, the Arab nation, in all parts of the world where they had established themselves, enervated them under a brutal despotism, and degraded them to a state akin to their primitive ignorance. Thus, wherever the Turk dominates, humanity retrogrades.

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* See P. S. Gérard, Recherches sur les établissments de Bains Publics à Paris, from the fourth century to the present time. (Annales d'Hygiene Publique et de Médicine Legale, Paris, 1832, T. VII, p. 5, et suiv.)

2. The Greek nation, which marched for so many ages at the head of civilized nations, is stripped, one by one, of the gems of its antique crown—power, virtue, courage, glory, independence, all successively pass away. It descends by a slow, but continued degradation, to the lowest rank of modern nations. In the course of this period, but a single physician merits a historic mention on account of his writings, and we find in these nothing new, with the exception of a few remedies borrowed from the Arabians, and without giving credit for them.

3. The western part of the Roman Empire, subjugated by the barbarians who issued from the forests of Germany and Scandinavia, fell into the the thickest darknes from the first ages of this period; but the inhabitants of these unhappy countries, though loosing the independence, order, and security which they enjoyed under the Roman institutions, preserved, at least, their manly courage. Their blood received new life by being mingled with that of the rude children of the North. They repulsed, in the first place, the Saracens, who poured upon them like a torrent from the South of Spain. Tranquil on that side, they turn their arms against each other, and bring ruin upon themselves for several centuries: then, excited by religious fanaticism, as were formerly the Mohamedans, they rushed by thousands to the plains of Asia Minor, Syria, and Egypt, which had been occupied for several centuries by the Saracens. These distant and adventurous enterprises, the aspect of an entirely new civilization, inspired the Francs with a taste for poetry and works of imagination, then in great honor among the Arabs. During the twelfth and thirteenth centuries, the governments of Europe become regulated and stable, liberal institutions are created, the mind of the people of the West shakes off, gradually, the rust of ignorance, and at the end of the Arabic period, we already see some brilliant streaks of light in the horizon of European nations. Medicine participated in this progressive movement. From the fourteenth century, we see it worthily represented in Italy, in Paris, and especially in Montpelier. Nevertheless, physicians as yet only knew how to follow, timidly, the track of the Arabs; scarcely any of them had approached their lips to the purer sources of Greek medicine.

Here I close the Age of Transition, or the middle ages, and now opens before us an era more glorious, which we may salute by exclaiming with the poet, "*Already commences a new order of famous ages.*"

Magnus ab integro sæclorum nascitur ordo.

VIRG. *Eclog.*

# BOOK III.

## AGE OF RENOVATION.

EXTENDING FROM THE COMMENCEMENT OF THE FIFTEENTH CENTURY TO THE PRESENT TIME.

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## VII. ERUDITE PERIOD.

INCLUDING THE FIFTEENTH AND SIXTEENTH CENTURIES.

### GENERAL CONSIDERATIONS.

This age, which includes a space of a little more than four hundred years, or only about one-third of the duration of the preceding age, offers, nevertheless, to the history of science in general, and that of Medicine in particular, much more abundant, varied, and interesting materials. The mind of Occidental Europe, long plunged into a species of torpor, gradually awoke, and seemed to have acquired by the repose an extraordinary vigor. Soon breaking its Gothic bonds, it launched forth, in every direction, with youthful ardor; some remounting the chain of ages to seek the debris of antique science, in order to restore and offer to it a species of worship; others endeavored to associate ancient with modern ideas, and elevate on this double base the edifice of human knowledge; others, finally, bolder and more precipitate, cut loose from the past, rejected its traditions, and assumed to build the scientific structure with new materials entirely.

I have already announced some of the circumstances that contributed to the awakening of the mind of Europe; such as the diminution of the internal conflicts between the princes and their vassals, a better social organization, the creation of establishments calculated to disseminate knowledge, etc.; and, I must add here, that this awakening was considerably favored by some industrial discoveries of capital importance.

The invention of the compass, for example, rendering long maritime voyages less dangerous and more frequent, opened to cosmography and many other sciences a vaster field. By the aid of the telescope, astronomy was able to seize some of the most scattered rays in the immensity of the skies; to calculate more exactly the revolutions of celestial bodies; to assign to our globe its true form, and to the sun its gigantic dimensions and legitimate place, in the center of our planetary system. The eye of the naturalist, armed with the microscope, penetrated into the domain of the infinitely minute, and perceived there a multitude of phenomena which the ancients had not even suspected. Engraving on copper, multiplying almost at pleasure the *chefs-d'œuvre* of painting and drawing, united to the verbal description of objects, their graphic, and, if we may say so, living representation, whenever that appeared necessary, as in the works on natural history and anatomy.

But of all the discoveries that inaugurated this modern age, and illustrated its commencement, no one has thrown such éclat or has exercised so great an influence on the development of ideas, as the art of printing. After writing, nothing has been found to the present time so favorable to the transmission of thought, as the typographical art. This art, in which the first attempts were made between the years 1435 and 1440, was carried from its origin to a degree of notable perfection by the united efforts of three industrious men, Guttenberg, Faust, and Shœffer. Thanks to their ingenious combinations, language, repeated an infinite number of times, was able to carry ideas and light even to the most obscure ranks in society. Thence the triumphs of intelligence and reason were secured; thence might be seen, in the future, more or less distant, the end of the dominion of brute force; for, by means of this happy artifice, thought was thereafter to be as imperishable as its source.

At the beginning of the erudite period, the Arabic literature was still predominant in the school of Medicine. The only authorities that were then invoked and explained, were Rhazes, Haly-Abbas, and Avicenna. Jacques Despars, one of the most distinguished professors of the faculty in Paris, in the first half of the fifteenth century, distinguished himself by his compilations of the books of Avicenna and Mesue. The taste for Greek literature began, however, to prevail in the universities of Italy, and finally grew so as to be extended into other parts of Europe, after the taking of Constantinople, in 1483, by Mahomet II., emperor of the Turks. This mournful event, which seemed to be a mortal blow to the Greek language and literature, hastened, on the contrary, their resurrection in the Occident. This city having been given over to pillage, a large number of learned men expatriated themselves, carrying

away all the manuscripts they were able to save. The most of them sought refuge in Italy, where they found enlightened protectors in the all-powerful princes of the house Medici, in Florence, in the Roman pontiffs, and Alphonso d'Aragon, sovereign of Naples and Sicily. These fugitives made their hosts acquainted with *chefs-d'œuvre* of Greek antiquity, so long forgotten; and paid thus their adopted country, for the hospitality that was accorded to them, by disseminating the models of a good literature. Among these strangers, who contributed the most to popularize Greek works, history gratefully cites the names of Theodore Gaza, Agryrophile, and Lascaris.

Thence the taste for books, libraries, and sound erudition was diffused throughout Europe. The monuments of Greek and Latin antiquity were hunted up and published with indefatigable patience and ardor; A mass of ancient works were edited, translated, and commented upon, with extreme care, and a great number of these translations and commentaries are still most estimable. The authenticity of manuscripts and purity of texts were discussed with sagacity; and efforts were made to free the new editions from faults, omissions, and interpolations, which had glided into the manuscript copies in the lapse of time, by the ignorance or cupidity of the copyists. Scholars of the first merit devoted themselves to this wearisome and thankless, though eminently useful, task; and they opened for their successors the pathway of science, and removed the obstacles that encumbered it. Let thanks be rendered to them.

For a short time, now, we will glance at the labors of some of those laborious critics who have elucidated for us the memorials of antique Medicine.

## CHAPTER I.

### HUMANIST PHYSICIANS.

1. The first who presents himself to us in chronological order, is Nicholas Léonicenus, who was born at Lonigo, near Vincenza, in the year 1428. He studied Medicine at Padua, and taught it for more than sixty years at Ferrara. His lectures and his numerous writings contributed effectually to propagate a taste for a sound literature. He was the first to translate directly from Greek into Latin the Aphorisms of Hippocrates, and several books of Galen. He enjoyed, during his long career, unalterable health and vigor of mind, which failed not for an instant—rare and precious advantages, due to his temperance, purity of

manners, and serenity of soul. He died at the age of ninety-six, regretted by the learned and by the people.

Léonicenus combated perseveringly the infatuation of his cotemporaries for the Arabs and Arabists; and he had the satisfaction to see them gradually return to the study of the Greek and Latin models. His letters on the errors of Pliny, the naturalist, and those of some other physicians, are written with an elegance and purity unknown before him; they offer the first example in this age of an impartial critic of the ancients. He demonstrates that the Roman encyclopedist, for whom he testified otherwise a profound veneration, fell into errors and manifest contradictions, for want of understanding well the Greek authors whom he compiled, and attaches the same reproach, but with more severity, to the Arabian writers. "These men," he says, in speaking of the latter, "never knew the plants which they described; they obtained their description from authors who had preceded them, and whom they have badly translated. On this account, there exists a chaos of various denominations and descriptions, more and more erroneous. Unfortunate the patient for whom the physician should order remedies on the faith of Mesue or Serapion!"*

This wise critic maintained always a tone of perfect urbanity and kindness against his cotemporaries, whose scientific opinions he combats. Here is what he wrote to Politien, in the letter we have just cited: "I had proposed to respond, by simple missive, not by a book, to the reasons that you alledge to justify Pliny in having confounded the ivy with the rock-rose, not being willing to make public my literary discussions with a man who is my intimate friend, and whom I honor from the bottom of my heart; but the matter requires more ample developments than I had supposed."

II. Thomas Linacre, of Canterbury, was the cotemporary of Léonicenus, though somewhat younger. After having made his first studies at the University of Oxford, he sailed for Italy, in 1484, for the purpose of perfecting his university instruction. He followed, at Florence, the lectures of Demetrius Chalcondylus, one of the Greek refugees of whom I have spoken, where his happy disposition, joined to his modesty, gained him the notice of Lorenzo de Medicis. That prince proposed to him to become the companion of his children in their studies, whose preceptor was Angel Politien, the same to whom Léonicenus addressed the affectionate expressions that we have given above. The young Englishman accepted with joy an offer so honorable to him, and which gave him an opportunity to satisfy his penchant for study, and he profited so

* Letter to Politien.

well by the lessons of his masters, that in a short time he became as learned as themselves.

After being thus nurtured on the cream of the finest literature of his time, he returned to his native country, where his talents were worthily appreciated and remunerated. Having become physician in ordinary to Henry VII., and the princess Mary, who afterward mounted the throne of England, Linacre showed himself worthy of his high fortune, by the zeal he displayed all his life in favor of sound education. He was the first of his nation who spoke purely, the language of the Romans. He translated several treatises of Galen, and his translations are still esteemed. These caused the erection of two chairs, one at Oxford, and the other at Cambridge, the incumbents of which had to explain the works of Hippocrates and Galen; but what entitles him most to the gratitude of his countrymen, is the foundation of the College of London.

To appreciate properly the importance of such a creation, and the merit of its author, we must reflect on the circumstances that surrounded this rising institution, and take into consideration the obstacles that had to be surmounted. At that epoch, the bishops alone had the right to give in their dioceses the permission to practice medicine, whence it resulted that the practice of the Healing Art was abandoned entirely into the hands of monks and illiterate empirics. Linacre had need of all his credit at court to obtain the reform of such abuses; but his persevering and enlightened zeal triumphed over all opposition. He obtained the issue of letters patent, which prohibited the practice of Medicine by any one who had not received his degrees in one of the two universities in the kingdom, and who had not been examined by the President of the College at London, assisted by three physicians delegated especially for that purpose. Behold by what a series of intelligent and generous efforts this estimable man merited and obtained the title of the restorer of Medicine in England.*

The two personages whose works and influence on the minds of their compatriots we have just succinctly traced, belong to the commencement of the Erudite Period. They merit particular attention, not only on account of the importance of their literary labors, but also because they were the first among physicians who embraced the culture of the Greek classics, and contributed efficiently to propagate it. Many others afterward followed the same course, and distinguished themselves in the same career, such as Gontier d'Andernach, Jacques Houlier, Louis Duret, and others; but I can not enumerate here the titles of all the men of talent who devoted their lives to restoring the monuments of

* Hist. Med., by Freind; article Linacre.

ancient Medicine; it is sufficient to have signalized the general tendency of the mind for bibliographic researches at the epoch of intellectual regeneration—a tendency which denotes a want profoundly felt, and which resulted from the new direction their studies began to take.

Indeed, from the moment that they began to realize the superiority of Greek models over their prolix Arab commentators, they were anxious to go back to the source of excellence, and sought with avidity the originals, which had till then remained covered up in the rubbish and dust of libraries. But at this time the copies of Greek authors were few in number, and in a deplorable state, owing to the neglect they had suffered during so many ages. It then became necessary and urgent to draw them from obscurity, to purify, co-ordinate, and multiply them, especially by the aid of printing. This work, too little appreciated to-day, required very extensive and varied knowledge, rare sagacity, and admirable disinterestedness and patience. The most eminent men in science did not disdain to be thus occupied. On this account, the epithet, erudite, seems to me to be very characteristic of this period, in which the grammarians enjoyed such great and worthy consideration.

Among the publications in medical literature, belonging to this epoch, is one which is out of the ordinary line of enterprises of this nature, and therefore merits special notice. I allude to the complete edition of the Hippocratic writings, with a Latin translation of Anuce Foes. "In the midst of the dearth of correct manuscripts," says a modern historian,* "defective texts, and numerous alterations introduced successively by the copyists, an exact and complete Greek edition of the works of Hippocrates was as earnestly desired as vainly expected for a long time. At last, the press groaned, and there was seen issuing from Frankfort on the Main, in 1595, a volume much less frightful by its mass, than by the idea of the time, application, and sacrifices of every kind, that its composition must have cost its learned and laborious author." Foes was a distinguished practitioner, whom fortune had not much favored. He lived on the product of his business, and on his income as pensioned physician of the city of Metz. He had consecrated to this immense work, the leisure and labors of forty years of his life. His name is henceforth immortal, by its association with that of Hippocrates, as the ivy shares in the strength of the oak to which it is attached.

I can not pass in silence another publication which dates, also, from the last half of the sixteenth century, less capital than the preceding, in a medical point of view, but in which the author has displayed an

* M. Dezeimeris.

erudition scarcely credible; it is the treatise on the gymnastics of the ancients, by Jerome Mercurialis, a classic work, not less precious to the historian than the antiquarian.

After having thus rendered a just homage to the bibliographic labors which concurred to the restoration of a good taste in Europe, it is time to examine, in detail, what became of each of the branches of medical science during this period.

## CHAPTER II.

### ANATOMY AND PHYSIOLOGY.

About the year 1315, Mondini, professor at Bologna, dissected the bodies of two women. Shortly after, he published an Epitome of Anatomy, illustrated with wood cuts, which obtained general success, and served for more than two centuries, concurrently with the writings of Galen and the Arabs, for anatomical demonstrations. But this abridgment contained nothing new: the parts were indicated only, rather than described. Lauth expresses himself about this author, as follows: "Mondini may be considered an anatomist who has examined, with discernment, the corpses that he has dissected, but we must stop at splanchnology, if we would not lose this good opinion. Let us see how he proceeds to reach the deep muscles of the extremities. 'Beneath the veins of the fore-arm,' he remarks, 'we see many muscles, and many large and strong cords, (tendons); of which it is not necessary to attempt the anatomy on such a corpse (a recent one), but on one dried in the sun for three years, as I have shown otherwise, in developing the number and the anatomy of those of the superior and inferior extremity.' He takes an opposite and unanatomical course to discover the nerves, advising maceration in running water."* At that era, and still for a long time after, it was the custom to demonstrate anatomy on hogs and other animals, and it was great boldness on the part of Mondini to apply the knife to the human body. The prejudice against dissection of the human body was so general, for more than a century afterward, no one dared renew, at least ostensibly, the undertaking of the Bolognese professor. His own conscience did not seem to be well satisfied by the operation, since he was not willing to open the head, for fear of committing a mortal sin. To comprehend his scruples, and those of his cotemporaries,

* Hist. de l'Anat., Strasbourg, 1815, t. I., liv. v, par. iv, sec. 2, p. 303.

it will suffice to add that Pope Boniface VIII. issued a bull in 1300, which forbade the evisceration and anatomical cooking preparation of the dead. This prohibition, it is true, says Holfinx, was only designed to abolish the absurd custom introduced by the crusaders, of cutting up and boiling the bodies of their relatives, deceased in infidel countries, so as to send them to their families to give them a burial in holy ground; but it is certain that the same bull was interpreted, whether right or wrong, as prohibiting anatomical dissection, for, in 1482, the university of Tübingen had recourse to the authority of Pope Sixtus IV. to obtain permission for dissection.*

It was only toward the close of the fifteenth century, and in the early years of the sixteenth, that this prejudice began to abate. The popes themselves, who stood then at the head of scientific movements, withdrew their interdictions, and the universities of Italy gave the first examples of public dissections. Achillini, Benedetti, and, perhaps also, Jacques Berenger, dissected previously to the year 1500, at Bologna, Padua, and Pavia. Soon after, their example was followed in many other places. Toward the close of the sixteenth century, Dubois, called Sylvius, following the fashion of the times, demonstrated anatomy at Paris, on the dead body. He gave for forty years, very frequently, special courses, and contributed very much to popularize the taste for this science. He dissected a great number of animals, and as many dead bodies as he could procure, which was no easy matter at that time, as we shall presently see. He subordinated, however, all his researches to the authority of Galen: so much so, that he would not admit any remark contrary to the statements of this author, unless that which contradicted him was considered as a freak of nature, or a result of the degeneration of the human species.

In like manner, all the other anatomists followed this vicious course; no one would permit himself to contradict the assertions of the oracle of Pergamos; until, at last, a man of genius and courage, prepared for literary discussion by severe study—a true reformer—appeared. He was Andrew Vesalius. Born at Brussels, in 1514, of a family for a long period illustrious in Medicine, he studied the humanities at Louvain, under Guinther, or Gonthier d'Andernach, who was there professor of the Greek language. Already the inclination of the young scholar, for anatomy, revealed itself in his pastimes; he amused himself in dissecting, during the recreations, rats, moles, dogs, etc. He made a conquest, literally, of his first skeleton, on the place of execution near Louvain. Having observed the body of a criminal, of which the birds

* Hist. de l'Anat., t. I., lib. v, part iv, sect. 2, p. 303.

had so perfectly cleaned away the soft parts, that there remained of it only the bones and ligaments, he detached successively the extremities; but when he attempted to carry off the trunk, he found it so strongly bound to the stake by the iron chains, that he was compelled to work all night to get it loose.

Afterward, he went to Paris, attracted by the course of Sylvius, which, as we have remarked, had acquired great reputation. While there, he was not content with the lessons of his master, but wished to observe nature himself; to accomplish which he had, more than once, to dispute with the dogs and vultures at the hill of Montfaucon, for the remains of criminals, or to introduce himself stealthily into the cemeteries, to disinter a body, at the risk of incurring the accusation of the capital crime of sacrilege. His progress was as rapid as his ardor, for his application was great. From his twentieth year, he gave instructions at Paris, to his fellow students, and exhibited to them the semi-lunar valves of the aorta, which Sylvius had not found. At the age of twenty-three, he was nominated to the chair of anatomy in the faculty at Padua, by the senate of Venice; at twenty-nine, he published his great work, in which this science is placed in a new light, and with a completeness which left far in the rear all that antiquity had transmitted on the subject.* The year following, Vesalius, no less renowned as a practitioner than as an anatomist, was called by the Emperor Charles V., to the court of Madrid, then the most brilliant in Europe, in the character of first physician. From this time he abandoned his anatomical labors, to resume them no more.

Vesalius dared subordinate the authority of Galen to anatomical inspection. He refuted many errors in his anatomy, and asserted that the greater part of his descriptions, having been made from monkeys, did not correctly represent the human structure. This audacity raised up against him numerous opponents, among whom his old master, Sylvius, showed himself the most animated and the least reasonable; but the young reformer vigorously made head against the storm, and as truth was on his side, at last triumphed. He was not, however, himself free from censure, notwithstanding the multiplied dissections which had served as the basis of his anatomy. He was amenable to the reproach brought against him by Columbus and Eustachius, that his descriptions of the eyes, muscles of the larynx, and tongue are not in accordance with nature. But, as said Lauth on this subject, "these irregularities and defects in his work do not destroy his glory; there results from it,

* De Humani Corporis Fabrica, libri septem., Basle, 1843, with wood cuts.

simply, that the route which he had traced was the true one, and was still open to conduct other learned investigators to celebrity."*

The minds of men generally, were ripe for the revolution of which Vesalius gave the signal; what proves it is, that scarcely had he appealed from the decision of Galen to the observations of nature, than a crowd of anatomists struggled to follow his method. We have already cited Columbus, who was his pupil—his co-laborer, and successor to the chair in Padua; B. Eustachius, professor at Rome, who shared with Vesalius the honor of having founded human anatomy, and of having made astonishing progress in it. We place on the same line, Fallopius, disciple and friend of Vesalius, who was professor, successively, at Ferrara, Pisa and Padua. He died prematurely for the science which he had cultivated with so much ardor and success; and his name must rest united to that of Vesalius in the history of modern anatomy, as those of Herophilus and Erasistratus are in the history of ancient anatomy. Lauth gives the following opinion of his labors: "Fallopius is as much distinguished for the delicacy of his language as for his anatomical talents. Under the modest title of "Observations," he has published a treasury of discoveries on all parts of the human structure; and when he sees himself obliged to correct Vesalius, he always softens the style of his criticism, though he does not abate its depth; so that the work of Fallopius is an excellent commentary on that of Vesalius."

The researches of Jerome Fabricius, on the formation of the egg and of the fetus—on the valves of the veins and the viscera, have equally a capital importance. They were designed for a treatise on human and comparative anatomy, which the author had not time to complete. But here I feel that I must pause; very many other names, and many other works, have a right to be mentioned, but I am forced to pass them in silence, and refer the reader to the special histories of Anatomy for them.

At this epoch, many modifications were introduced in the regulations of the Faculties of Medicine; permanent amphitheaters for dissection began to be established—for till then, the anatomists had dissected either in their chambers or in some provisional hall. Anatomical chairs were created, and the salaries paid out of the public treasury. In some cities the supply of material was not limited to the bodies of criminals, but permission was also given to dissect the dead at the hospitals. The Roman Pontiffs seem to have taken the initiative in this respect, which explains the great number of subjects with which Eustachius was supplied, compared with Vesalius, who obtained only two or three in a

* Hist. de l'Anat., p. 373.

year. The razor, a very incommodious instrument, was also replaced in dissection by the pointed scalpel, which has remained in use till now.

This concourse of circumstances elevated anatomy very promptly, to a degree of perfection it had never attained under the Greeks. Plates, designed by skillful artists after very careful anatomical preparations, represented our organs with more exactness and detail than had been supposed possible. The nerves were entirely separated from the tendons and ligaments. They were traced as far as possible, from their origin to their finest ramifications; and the anatomists assured themselves that the muscular fibre was not produced by an expansion of the nervous fiber. A glimpse was also obtained of the lymphatic vessels.

Capital discoveries were also made in the vascular apparatus. It was discovered that there was no bony structure in the tissue of the heart, as the ancients believed; that the partition which separates the cavities of that viscus, was not at all porous, so that the blood could not pass from one cavity to another, through the septum. The attentive examination of the valves led, finally, to the discovery of the pulmonary circulation. Michael Servetus, the same whom Calvin burned at the stake, was the first to discover this important phenomenon. He saw that the sanguinary fluid could not penetrate, directly, the left, from the right cavities of the heart, owing to the impermeability of the partition, so that it was necessary for the whole mass of the liquid to pass through the lung, where it became impregnated with the vital spirit contained in the atmosphere, and reached, afterward, the left auricle. The disposition of the valves of the pulmonary artery and veins, plainly confirmed this conjecture. Besides, the caliber of the pulmonary artery appeared enormously disproportioned to the quantity of blood necessary for the nutrition of the lungs; which seemed to prove that such was not, as had been believed true till then, the unique purpose of that vessel. About the same period Fabricius d'Aquapendente, pointed out the valves in the veins of various parts of the body: and shortly after, Columbus and Andrew Cesalpine explained in a more explicit manner the mechanism of the pulmonary circulation.

All these discoveries were an immense progress made toward the discovery of the great circulation. It seemed that there remained only a small step, to arrive at it; and we feel astonished that those great anatomists of the sixteenth century should have paused in so plain a path. Andrew Cesalpine so closely approached this conception that some have thought that he attained it; but the passage on which they sustain themselves does not authorise that opinion. The following is his statement: "The openings of the heart are disposed in such a manner that the passage is free from the vena cava into the right ventricle

and from that cavity into the lung; further, there exists a communication from the lung to the left ventricle, and from this last into the aorta. Membranes are placed at the orifices of the various conduits, in such a way that a retrogade flux of the liquid column is impossible. In this way is effected, continually, the passage of the blood from the vena cava into the right cavities of the heart, and from these into the lungs, and thence into the aorta by the intermediation of the left ventricle, as we have explained in the Peripitecian questions. Now while awake, the movement of the innate heat is from within outward, and during sleep it is the reverse; hence it follows, that while awake a great quantity of the vital spirit and blood are carried to the arteries, which transmit them to the nerves; and, during sleep, the same heat returns to the heart, not by the arteries, but by the vena cava, which alone communicates with this organ.

"The proof of this is drawn from the arterial pulsations, which are large, vehement, prompt and frequent, with a species of vibration at the moment of awaking, while they are small, languishing and slow during sleep—for at this time the natural heat is carried less to the arteries; but it flows freely there, as soon as we are aroused.

"The veins act entirely different; they enlarge during sleep, and diminish when we are awake, which is easily seen in those on the hands. This occurs, because during sleep the natural heat passes from the arteries into the veins, by means of their anastomases, and in that way returns to the heart. In the same manner the flux and reflux of the blood toward the superior and inferior parts, like the waves of Euripus, manifest themselves during sleep, and when we are awake also. The same species of movement is manifested either by applying a ligature around some part of the body, or by pressure on the veins in any other way. For when the course of a stream is interrupted, it swells above the obstacle. Perhaps in this case the blood returns back to its source *(son principe)*, so that this interruption may not *(ne l'éteigne)* destroy it."*

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* This passage is of extreme importance, because upon it is founded the right of Cesalpine to the greatest discovery of modern physiology. I have, therefore, thought it proper to transcribe here the text, even, of the author, so that each one may judge for himself, having the passage in his hands:

"Ilud sciendum est: cordis meatus ita a naturâ paratos esse, ut ex venâ cavâ intromissio fiat in cordis ventriculum dextrum, undè patet exitus in pulmonem: ex pulmone prætereà alium ingressum esse in cordis ventriculum sinistrum, ex quo tandem patet exitus in arteriam aortam, membranis quibusdam ad ostia vasorum appositis, ut impediant retrocessum: sic enim perpetuus quidam motus ex vena cava per cor et pulmones in arteriam aortam, ut in quæstionibus peripateticis explicavimus. Cùm autem in vigiliâ motus caloris nativi fiat extra,

Observe first, that this passage includes all the elements necessary to arrive at the knowledge of the circulation of the blood. The author says, positively, that the blood cannot flow backward, through the arteries, toward the heart, on account of the membranes which close the orifice of the aorta; and he adds that the vena cava is the only vessel which permits its entrance into that viscus. He speaks, also, of the anastamoses of the arteries and veins. He remarks, that if a band is applied around a member, the veins tumefy below the ligature. Does it not seem that the author needed only to pronounce the word circulation, to have resolved the problem? But this word fell not once from his pen; but he compares it to the flux and reflux of Euripus, as Aristotle had done. It is evident that he tortured his mind to conciliate two irreconcilable theories, viz.: the opinions of the ancients on the movement of the blood, with the recent discoveries of anatomy. Thus, the glory of Harvey is untouched by this discussion, as will appear more evident still, in its place.

## CHAPTER III.

### HYGIENE.

Next to anatomy, hygiene was one of the branches of Medicine least cultivated in the middle ages. The governments being entirely occupied with the care of maintaining and extending their dominions, never,

scilicet ad sensoria: in somno autem intra, scilicet ad cor: putandum est in vigiliâ multum spiritûs et sanguinis ferri ad arterias, indè enim in nervos est iter. In somno autem eumdem calorem reverti ad cor, non per arterias: ingressus enim naturalis per venam cavam datur in cor, non per arteriam. Indicio sunt pulsus, qui expergiscentibus fiunt magni, vehementes, celereres et crebri cum quâdam vibratione: in somno autem parvi, languidi, tardi et rari (3 *De caus. pul.*, 9 et 10). Nam in somno calor nativs minus vergit in arterias: in easdem erumpit vehementiùs, cum expergiscuntur.

"Venæ autem contrario se modo habent: nam in somno fiunt tumidiores, in vigiliâ exiliores, ut patet intuenti eas quæ in manu sunt. Transit enim in somno calor nativus ex arteriis in venas per osculorum communionem, quam anastomosin vocant, et indè in cor. Ut autem sanguinis exundatio in superiora, et retrocessus in inferioria, instar Euripi, manifesta est in somno et vigiliâ, sic non obscurus est hujusmodi motus, in quâcumque parte corporis vinculum adhibeatur, aut aliâ ratione occludantur venæ. Cùm enim tollitur permeatio, intumescunt rivuli quâ parte fluere solent. Fortè recurrit eo tempore sanguis ad principium, ne intercisus extinguatur." (Andreæ Cæsalpini, *Quæstionum medicarum*, lib. (8c.') quæstio xvii. Venetiis, apud Juntas, 1571.

or very rarely, inquired into what concerned public health. In the capitals even of European states, no measure of police, no administrative rule, existed for keeping the streets and houses clean, the free circulation of air, the soundness of the food employed by the people, and the propagation of hygienic habits. Those who founded or endowed hospitals, asylums, and monasteries were not moved by any thoughts of social amelioration, but by a pure sentiment of Christian charity—or the fear of hell. In the establishments for public instruction, nothing was foreseen or ordered, in view of the physical perfection of man; none but the most ordinary and urgent cares were bestowed upon the health of the pupils. There was, moreover, an opinion universally diffused, and received almost as an article of faith, that there was no better means for increasing the intelligence and enlarging the empire of the soul, than to mortify the body. The statutes of most of the religious orders had no other object. The clergy, placed at the head of instruction and of the liberal professions, were profoundly imbued with this prejudice, which explains their indifference to the physical education of youth. During the lapse of several ages, no other hygienic code was in vogue than the dietetic maxims of the school of Salerno, in which there was nothing to justify its high reputation.*

On the revival of letters, the attention of physicians was early turned toward the means of preserving health and preventing diseases. But, at first, they only compiled, with more or less erudition, the teachings of the ancients on this matter. The earliest writings, at all original on this subject, belong to the second half of the sixteenth century, and appertain to a man unconnected with Medicine.

Louis Cornaro, a Venetian noble, had never enjoyed robust health, and at the age of thirty-five he saw that his health was growing worse. He was a prey to pains in the stomach, with loss of appetite, and attacks

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* My manuscript was finished, and already in the hands of the printer, when I saw the work of M. Levy, in which I find a just and elevated appreciation of the Salernian Sentences. I think I can not do better than copy them for the reader: "If we place ourselves in the perspective of the progress accomplished during the last four or five hundred years, to judge of this book, which is a summary of the spirit of that celebrated school, we perceive only an undigested mass of Medicine and dietetics: a fragment of Galenism, united to the recipes of the Arabian polypharmacy; the maxims of antique wisdom, and the accredited echoes of the popular superstitions. But let us not judge the works of past centuries by the light of our day. The Medical Testament of Salerno is a historical document, and not a work to study, in regard to the present state of science. Nevertheless, we find, on several of its pages, distinct reflections of the Hellenic school, and more than one sound hygienic maxim strikes us as being of Hippocratic origin."

of gout more and more frequent. Besides, he felt himself slowly consumed by a slight continued fever, and was a prey to a thirst which he could not satisfy. For five consecutive years, he employed all sorts of remedies without obtaining any relief; on the contrary, his condition became worse every day, and he saw in prospect only an untimely death, preceded by long sufferings. Finally, his physicians told him that there was only one resource left, and that was, to renounce his habits of intemperance, and adopt a course of life extremely sober, from which he must never vary. Cornaro took a firm resolution, and held it. In the first place, he studied to know the various species of aliment which suited his stomach, and the quantity to take, in order not to be incommoded. After some experiments, he fixed on twelve ounces of solid food, composed of bread, yolk of eggs, meat, fish, etc., and fourteen ounces of liquid. Every morning, he weighed out his rations for the day. This regimen suited him so well that, at the end of a year, he was freed from all his afflictions. At the same time, his appetite returned: he recovered his former gaiety, equanimity of humor, aptitude for mental efforts, and bodily exercises. In short, he lived without infirmities to the age of one hundred years.

The whole life of Cornaro offers us a striking example of the salutary effects of sobriety; but there is one trait in it which shows the power of habit. At the age of seventy-eight, overcome by the solicitations of his friends and kinsfolk, who pressed him to relax a little the severity of his diet, he consented to add to it, two ounces of solids, and two of liquids, each day. His stomach was very soon deranged; he lost, gradually, his appetite, and his manner became taciturn; in fine, he soon fell into a severe fever, which lasted thirty days and nearly destroyed him. He was not re-established until he had resumed his former way of living. In his account of the advantages of sobriety, Cornaro takes pleasure in enumerating all the happy effects which he realized from his manner of living. He states, that he composed, in his eightieth year, a comedy, *characterized by refined and pointed wit, and written in a lively style.* At this age, he mounted his horse easily, and climbed the steepest hills, and was always in a good humor. In his old age, nevertheless, he endured some severe trials; but he overcame them well, thanks to the happy disposition of mind and body with which his regimen endowed him. On one occasion, among others, he was obliged to sustain a severe law-suit, which caused the death of his brother from chagrin; but, though the suit concerned himself especially, his health was not altered nor his courage shaken, and he came out of it victorious in every respect. Nevertheless, the enthusiasm of the old man did not go so far as to believe that the same diet would suit everybody:

he only asserted that if men never went beyond the limit of need, in eating and drinking, they would avoid a great many infirmities, and prolong their days much beyond the period usually attained.*

The history of Cornaro, say Hallé and Nysten, may be placed with the number of fine experiments which have been made in hygiene; and, consequently, which have contributed to fix its principles, and concur to the progress of the art.†

I shall say nothing of the memoir of the Jesuit Lessius, on the same subject, because it is only a paraphrase of the treatise of Cornaro; but I must mention here the treatise, on Gymnastics, by Mercurialis. This work, whose literary merit I have already appreciated, does not develop any new notion, it is true, but directs the attention of men of the Profession, and the public at large, to hygienic considerations, so long abandoned and forgotten. It must, therefore, contribute to the restoration of hygiene.

## CHAPTER IV.

### GENERAL PATHOLOGY.

We now return to the ancient divisions of Medical science, such as Galen and Celsus adopted: that is to say, that after having studied man in the normal state, in anatomy, physiology, and hygiene, we proceed to study him in the abnormal state, in pathology and therapeutics. These last two departments will be divided, as heretofore, into internal and external. However irregular may appear this distribution of diseases, we are forced to follow it, because it was adopted by all the authors of that period. Pathology is a subject so vast, so complex, and so changeable, that it is impossible to establish an irreproachable classification; we must, therefore, content ourselves with an exactness more or less approximative. But let it be remembered, that a classification even vicious, is much better than none at all, for this latter state is nothing less than chaos—the negation of all general ideas, of all science. The distinction of diseases into acute and chronic, existed then as at present; but in their treatises, no separation was made of the first from the second, as the ancient Methodists had done; the acute and chronic states were considered as two forms of the same morbid entity, not as

* On Sobriety and its Advantages, by Lessius and Cornaro; new translation, by M. de la Bonardiere, Paris, 1701.

† Dictionaire des Sciences Medicales, in sixty vols.; art., Hygiene.

two different species. Etiology was treated with much more subtilty, in conformity with the Peripitecian doctrine, as we shall show in the chapter on theories. In short, we see commenced in this period the rudiments of a new branch of pathology, which is styled pathological anatomy, and which is destined to acquire a capital importance in modern times.

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## CHAPTER V.

### INTERNAL PATHOLOGY.

#### § I. Semeiotics.

The section of pathology which is devoted to the interpretation of symptoms, considered in a general and abstract manner, made but few acquisitions after Galen. The Arabs added to the science only a small number of observations, the most interesting of which belong to eruptive fevers; and the Greeks and Latins of the middle ages did little more than copy each other. At the epoch of the revival of letters, writers occupied themselves in collecting the discoveries of anterior ages, to withdraw them from the oblivion into which most of them had fallen, to elucidate and put them in order. They made, to use the expression of Guy de Chauliac, an inventory of all the acquisitions of the past, and this was the best which at that time could be done; for, before innovating and reforming, it is necessary to know what exists, and to be acquainted with the actual state of science.

The savans of the fifteenth and sixteenth centuries acquitted themselves perfectly of this task, as we have already shown. If they did not make many discoveries, they prepared the way for their successors, for the rejuvenation of ancient ideas so long forgotten. Can not this, to some extent, be called an invention? Among those whose writings contributed to elucidate semeiotics, may be cited Vallesius, Prosper Alpin, Lommius, Thomas Fyens, and especially, J. Fernel. The latter offers us, in the second and third books of his pathology, the most succinct and lucid summary of the notions and ideas that composed the science of symptoms among the ancients. After having defined what he understands by signs and by symptoms, and how these phenomena must be distinguished from the disease itself, he exposes the signs of various species of plethora, namely, the sanguineous, bilious, melancholic, pituitous, and serous; then he devotes the whole of the third volume to an examination of the pulse and the urine. In this we find sphygmology and uriscopy forming the basis of prognosis and of curative

indications; further, that they did not hold to the plan of grouping symptoms to form tableaux, according to the synthetic method, of which Hippocrates has given so fine an example in his treatise on Prognosis, but that a separate examination was made of each phenomenon, which was isolated, and an effort made to go back to its cause, so as to deduce all the indications it could furnish, according to the analytic method introduced by Aristotle and continued by Galen.

"The pulse and the urine," remarks Fernel, "furnish the surest indications concerning the force of diseases; the first, by revealing the state of the heart and the arteries; the second, by indicating the state of the liver and the veins; for these organs hold under their dominion the whole economy. The pulse shows clearly the energy possessed by the vital faculty, as well as the whole body, and shows the present condition of the heart and arteries. The urine reveals the qualities of the humors and the state of the liver in a very distinct manner, it enlightens us on the diseases derived from them, but it furnishes but little light as to the vigor of the vital movements, and of the body in general."* The whole of the third book is only the development of the proposition just quoted, namely, the theory of the pulse and the urine.

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### § II. Pathological Anatomy.

Toward the end of the Erudite Period, pathology was enriched from a new source, and one destined to shed great light on the diagnosis of diseases, and which establishes a line of demarcation between ancient and modern Medicine; this is pathological anatomy. The idea of studying the sensible traces that disease leaves in our organs after death, began to germinate in the minds of physicians at the close of the fifteenth century. Anthony Benivieni, a physician of Florence, appears to have been the first, or at least one among the first, who conceived of the knowledge that might be attained by opening bodies with the view of ascertaining the location and causes of diseases. M. Malgaigne remarks as follows about this author: "A eulogy which he merits without reserve, which he shares with no other person, and which has not been accorded to him, up to this time, by the many historians of surgery who have superficially searched in these precious sources, is, that he was the first who had the habit, and felt the need, and set the useful example which he transmitted to his successors, of searching on the cadaver, according to the title of his

* Fernel's Pathologiæ, lib. III, cap. 1

‡ De Abditis Nonnullis ac Mirandis Morborum et Sanationum Causis, a work printed after the death of Benivieni, under the care of his brother Jerome. Florence, 1507.

book, for the concealed causes of diseases." † Benivieni did not limit himself to opening the bodies of his own cases; he sought occasions for autopsy with the same ardor that characterizes the anatomists of our times. In fine, he explored the bodies of those who had been hung, without any hope of attaching anatomical lesions to the symptoms he had not been able to see, but always thinking to find on them something of interest, so as to be able to turn his researches to the profit of descriptive anatomy and physiology." * After him, Bartholomew Eustachius was one of those who showed most zeal in anatomical researches. We owe to him precious observations on the structure, functions, and diseases, of the kidneys. He shed on these subjects a clear and new light. He was also the first in modern times, who attempted to clear up the anatomy and physiology of man, by comparing them with that of the animals.

After Eustachius, we must mention, as at the head of the physicians who cultivated pathological anatomy in the sixteenth century, Rembert Dodoens and Marcellus Donatus. The latter refutes the prejudice which in his time, in many localities, still opposed autopsies, in the following terms: "Let those who interdict the opening of bodies well understand their errors. When the cause of a disease is obscure, in opposing the dissection of a corpse which must soon become the food of worms, they do no good to the inanimate mass, and they cause a grave damage to the rest of mankind; for they prevent the physicians from acquiring a knowledge which may afford the means of great relief, eventually, to individuals attacked by a similar disease. No less blame is applicable to those delicate physicians, who, from laziness or repugnance, love better to remain in the darkness of ignorance, than to scrutinize, laboriously, the truth; not reflecting that by such conduct they render themselves culpable toward God, toward themselves, and toward society at large." †

Nevertheless, pathological anatomy had no considerable extension during this period. Few men cultivated it in a regular manner, and the totality of their discoveries do not constitute the elements of a doctrine; but their labors merit the attention of the historian, as indicating a new tendency which makes an epoch in science.

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### § III. Nosography.

Of all the treatises that appeared during the period we have named Erudite, that of Fernel obtained the most universal and durable success.

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* Introduction to the works of Paré, p. 119.

† Marcellus Donatus, Medica Historia, lib. VI.

It became classic throughout Europe. It is, in fact, the complete and lucid resume of the Galeno-Arabic doctrine, at that time taught exclusively, in the schools of Medicine. In reading the work of Fernel, we can form a correct idea of the manner in which diseases were studied, at that epoch, and the general state of the science. On this account it merits a special attention on our part, and we proceed to present a short analysis of it.

Fernel has included pathology entire in seven books. The first three are devoted to the most abstruse generalities concerning the essence of diseases, their causes, signs, and symptoms. The author explains each of these with much subtility; he traces the rules which he believes infallible, in order to arrive at a knowledge of them in every instance. The material contained in these three books embraces all the questions relative to etiology and semeiotics, and forms a treatise on general pathology. We will recur to it in speaking of theories.

The last four books include particular descriptions of all diseases then known, and their methodic classification, which constitutes nosography proper. The diseases to which men are subject are therein classified as general and special; the former includes those whose locality is undetermined, (*morbi incertæ sedis*) and the latter, those which appertain to a part, or to an organ, exclusively.

The first class, then, or general diseases, only comprehends fevers, of which Fernel admitted three genera, viz: simple, putrid, and pestilential. Each of these genera was subdivided into a small number of species or types, to the description of which the fourth book on pathology is devoted.

The second class, or special diseases, is also divided into three orders, viz.: First, diseases which affect a part, situated above the diaphragm. Secondly, those affecting parts below that partition. Lastly, external or surgical diseases. The description of morbid species, comprised in these three orders, fill the last three books on pathology, viz.: the fifth, sixth, and seventh.

Notwithstanding its defects, the nosological classification, at which we have just glanced, was very superior to all those which had preceded it. It possessed, in a very high degree, the merit of clearness and precision, which is an essential quality in a work of this kind. At that time. considered in regard to cotemporaneous science, it included, easily, all the derangements of health. Such a division of diseases sufficed for the epoch in which it was proposed; but science has greatly enlarged since that time, so that now the nosography of Fernel is extremely defective. I shall not attempt to point out its numerous imperfections,

but will signalize one only, extremely grave, which the author might have avoided.

In all nosography the important capital condition consists in portraying, exactly, the morbid species, and tracing the characters of each of them so faithfully, that the practitioner can not confound them with each other. Now, the work of the French nosologist is especially defective, in this respect; his descriptions are insufficient, too short, and sometimes worthless. He makes no special mention of eruptive fevers, nor of other affections then newly observed; such as scurvy, hooping-cough, raphania, or cereal convulsions, etc. He names, among new affections, nothing but syphilis, of which he gives a sufficiently exact description, though rather too succinct. In regard to the known ancient diseases, instead of taking for models the tableaux of Aretæus, Cœlius Aurelianus, and Alexander of Tralles, he adopts, a little too servilely, the ideas and method of Galen; besides, his descriptions are generally inferior to the authors we have just named, as may be judged by the following example:

"Peripneumonia," says Fernel, "is a phlegmasia of the lungs, which is related sometimes to phlegmon, and sometimes to erysipelas. There is great difficulty in respiration; the cheeks are a bright red; the eyes appear swollen and prominent. If the inflammation is phlegmonous, the patient spits blood, according to Hippocrates, unless the expectoration is extremely crude. He feels a constriction under the hypochondria and throughout the chest, a great weight beneath the sternum, and in the back; the fever, however, is moderate. When the inflammation is erysipelatous, the cough brings up yellow matter, mingled with a little blood; the tightness of the chest and the sensation of weight are less, but there is more fever.

"These two forms of fever arise sometimes primitively, and, again, succeed an acute angina, or a pleurisy, when the humor is thrown suddenly from the throat or the side upon the lungs. According to Hippocrates, a peripneumonia which proceeds from an inflamed side is bad; for if, in a violent pleurisy, the pain in the side ceases suddenly, or diminishes considerably, it makes, ordinarily, a metastasis to the lungs; the cough and suffocation augment, or peripneumonia, accompanied by a bloody expectoration, appears; and but few patients recover. When peripneumonia does not succeed another affection, but is an original affection, it is caused by thinness and biliousness of the blood, which the right ventricle of the heart throws vehemently, and in too large quantities, into the lungs. The blood fills up not only the veins and arteries of the organ, but, also, it invades the parenchyma itself; it distends it too much, coagulates, putrefies, and lights up an inflammation, which

is not limited, as in other circumstances, but is diffused throughout the viscus. True peripneumonia is, however, extremely rare. Hippocrates attributes it, especially, to drunkenness; the use of fish whose sticky flesh is contrary to the nature of man, such as the mullet and eel; or to the habit of eating too much; or to a change of water. Sometimes a thin and acrid humor flows abundantly from the brain into the lungs, assumes an unnatural character, and produces heat with fever. Many persons give the name of peripneumonia to that species of disease in which the cough, the difficult respiration, and a slow fever consume the patient, without ulceration of the lungs, or sanguineous expectoration. If this be called peripneumonia, it must be borne in mind that it differs very much from legitimate peripneumonia, in the nature of the cause and the extent of symptoms."* This tableau, it is plain, is inferior to that drawn by Aretæus of the same disease, which was heretofore given.

About the end of the sixteenth, or the commencement of the seventeenth century, a Swiss physician, named Felix Plater, a very distinguished practitioner and professor at Bâsle, published an abridgment of Medicine,† in which diseases are classified in an entirely new manner. He treats, in the first place, of lesions of functions, which he divides into lesions of sensation and lesions of motion; secondly, he speaks of pains, of which he admits only one kind; finally, he treats of vices, which he distinguishes into vices of the body and vices of excretions. This, it is seen, is an entirely new and very defective classification. We have alluded to this book, less on account of its intrinsic value, than as a first step in an unexplored route, where a new era in nosography begins. The author does not class pathological affections according to the presumed state of the interior of the body, i. e., according the intimate phenomena which are fulfilled, or are supposed to be fulfilled in the structure of the organs, but according to the totality of their apparent symptoms.

## CHAPTER VI.

### INTERNAL THERAPEUTICS.

Everything in Medicine is connected, or should be connected with therapeutics. *Ars medica est id quod est propter therapeuticen:* such is the maxim that should never be lost sight of by men who write on

* J. Fernelli, Pathologiæ, lib. v, cap. x.

† Praxeos seu de Cognoscendis, Curandis Affectibus Humani Incommodantibus Tractatus, Basilæ, 1602.

any branch of the Healing Art. Anatomy, physiology, pathology, etc., must all converge toward therapeutics as a common center. Each of these has an effective value only in proportion to the succor it gives in the treatment of diseases. This is a truth which needs no demonstration—it is barely necessary to announce it; nevertheless, it has been forgotten or mistaken sometimes, by eminent minds. We see the ultra sectarians of the autocratism of nature, or animism, make the perfection of the Art consist in the knowing in advance and predicting the course, crisis, and probable issue of a disease, limiting, to some extent, the duties of the physician to the idle contemplation of the sufferings of the patient. We see the blind partizans of another school attach such a high interest to the determination of the anatomical lesions whose traces are seen after death, that they lose sight of the treatment, or say a word about it, for form's sake, and occupy themselves exclusively with the alterations observed in the dead body. It is to the zealots of this school that the sentence of Asclepiades may be justly addressed: "*Your Medicine is only meditation on death.*"

What are, in the eyes of men matured by practice, and undeluded by the pompous promises of anatomism, what are, I say, diagnosis and prognosis, if their light does not serve to improve treatment and render it more efficacious? For the true practitioner, as well as for the patient, therapeutics is the cap-stone of the Science, the criterion of the real progress of the Art. On this point it merits a very particular attention, and the details into which I proceed to enter on this subject, will interest, I presume, those readers who seek in this history something more than the vain satisfaction of curiosity.

The epoch of the revival of letters forms, as is shown, the limit between the middle ages and modern times. The physicians of that famous epoch attempted less to create new methods of treatment, than to restore the ancient ones; they attempted to conciliate the Greeks with the Arabs; Galen with Avicenna, and to study their writings is to converse still with the classics of antiquity. It will be, then, a last glance which we proceed to take of the doctrines of the fathers of Medicine—a definite judgment which we shall render on the rules they have transmitted to us, before passing to the changes that the moderns have thought it their duty to make.

Among the writers of the Erudite Period who have shown themselves zealous partisans of the Greek theories, no one has better penetrated their spirit than John Fernel, no one has succeeded better than he, to attach to them the practical facts of his times; no one, in fine, has connected with as much art as he the ancient theories with modern discoveries, so as to form a complete body of doctrines, and develop clearly

the principles for the guidance of his cotemporaries in the treatment of diseases. It will be, then, in his writings that we obtain the knowledge of these principles, and the consequences that were deduced from them.

Fernel has divided his therapeutics into seven books, the same as his pathology, following in the two treatises an analogous if not uniform plan. He explains, in the first place, the generalities, or as was said then, the principles; afterward, he passes to the particular rules of practice, and he shows how each of them is comprised in the principles he has established. He proceeds constantly from generals to particulars, according to the method of Aristotle and Galen, to which he strictly conforms, true Peripatecian as he was.

Fernel commences by laying down the fundamental axioms of therapeutics, the pivot around which must turn all the particular rules of treatment, which axiom was nothing else than the famous law of contrarieties, which we have already brought before our readers and discussed, but which we have promised to submit anew to a more thorough examination. The time has now arrived to devote ourselves to this examination, because no author, ancient or modern, has supported this great axiom with as numerous, subtile, and specious arguments as Fernel. He opens the subject as follows: "*Every disease must be combatted by contrary remedies*—for a remedy is that which can drive out a disease; now, that which drives, acts violently—that which uses violence, is in opposition: therefore, the remedy is always opposed to the disease, and no healing can take place except in virtue of the law of contraries."*

This argument, notwithstanding its apparent precision and its scholastic form, is evidently a begging of the question. It amounts to this: diseases must be combatted by their contraries, since all that cures a disease is contrary to it. But is it not plain that he offers as a reason, and alleges as proof, the very thing itself which he undertakes to prove? It is affirmed that all that cures a disease is contrary to it, and that is really what should be proved. This reasoning reminds us very much of that which a celebrated comic poet puts sometimes in the mouths of his characters, as, for example, when he makes one of them say, "your daughter is dumb because she does not speak."† Such is the sophism with which one of the loftiest intelligences of the sixteenth century deceived himself, and imposed on the whole Medical world!

Fernel, however, did not content himself with the subtile and arid

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*Joanis Fernelii, Therapeuticus Universalis, seu Methodi Medendi, lib. I, cap. III.

†Moliere, dans la Comedie du Medecin malgre lui.

argumentation which we have given above. He knew too well, that a rule of medicine must be verified, especially, by practice, consequently, he essayed to demonstrate that each particular case of healing enters, necessarily, into the law of contraries. Let us follow him as he developes this law. We call contraries, he says, not only those things which are endowed with opposite elementary qualities, as heat and cold, dry and wet, but also, all things which differ among themselves in any way, whether as to quantity, number, situation, figure, etc. Thus, the hard and the soft; the dense and the diffuse; the great and the small; that which is in excess, and that which is deficient; the high and the low; the full and the empty; what is pure, and what is impure; that which is entire, and that which is broken; such as these are what Fernel understands as *contraries*.

The above is an example of the puerile subtilties into which a superior mind is forced to descend, when it proceeds upon a false principle. According to the language of Fernel, a drop of water would be the opposite of a lake; a giant the opposite of a dwarf; a pitcher empty, the opposite of a full one; a mountain the opposite of a valley, etc. Who does not see, at the first glance, that these are the opposites of the painter, the poet, or the rhetorician, or, in other terms, contrasts; but not at all real opposites, founded on the antagonisms of forces, or elementary properties, according to the understanding of physicians, philosophers, and mathematicians? In the language of these, the term contrary is applied either to qualities which neutralize each other, such as heat and cold, dry and moist, or to forces which act in a manner diametrically opposite, such as the south and north wind, and the centripetal and centrifugal forces.

In giving to the word *contrary*, the unlimited extension of our therapeutist, we make it the synonym of the word *different*, but then the famous precept to treat diseases by contrary remedies, signifies nothing else than to treat them by remedies which differ from the disease itself, or its cause, which amounts almost to nonsense. Such an axiom is not worth the trouble of being laid down, and certainly this is not the sense which the early writers, such as Hippocrates, Galen, and their innumerable ancient and modern sectators attach to it. When these advised to give in each affection remedies contrary to the disease, they meant remedies whose properties or curative virtues would be in opposition, real or direct, with the hidden cause or principle of the disease. It results from this, that Fernel, in order to justify his fundamental dogma of medical practice, is obliged to torture the sense of words, after having tortured logic.

Moreover, notwithstanding the exorbitant extension which was given

to the word *contrary*, this author still fearing that his therapeutical axiom did not embrace every possible case of cure, hastens to go beyond all the doubts and objections that could be given to it by the following interpretation: "Many men conceive that this sovereign principle is annulled, when it is said, that there are diseases which are cured by similars: but these persons do not reflect that such remedies, though apparently similar in their effects, to the symptoms of the disease, are opposed to the causes which produced it, so that they destroy the disease by removing its cause; thus, rhubarb, though heating, extinguishes fever by purging the matter which feeds the fire. Exercise fatigues us by aiding the elimination of the humors effused into the muscle. A purgative arrests a dysentery by evacuating the peccant matter, which causes, and sustains it."*

Certainly, Fernel has interpreted the axiom of contraries in a way so wide and flexible, that it is impossible to suppose a case of cure which is not comprised in it. Order whatever remedy you please; employ any curative procedure of which you may get an idea; if the remedy or procedure is successful, according to Fernel, it will be always on the principle of contraries, even if there should be identity between the cause of a disease and the means of cure; as when we cause the pain in a small burn to cease, by heating the burnt part for an instant at the fire; or when the frozen fingers are warmed by rubbing them with snow.

But let us leave these vain artifices, which have not caused ancient science to advance an iota, and let us explain how it happened that so many eminent men, with their light, could content themselves with it, during a long series of ages. In clearing up this psychological phenomenon in one single individual, we do it for all. Fernel possessed a mind essentially logical. Before embracing the profession of medicine, he was distinguished by his discoveries in mathematics and astronomy. When he emitted a principle which he believed well founded, he pushed it to its last consequences, as do all minds of his stamp. Now, in his philosophical and medical education he had acquired a great veneration for the ancients; he could not persuade himself that a principle adopted almost unanimously by the most sublime geniuses of antiquity—by Hippocrates, Aristotle, Galen, and so many others—as the basis of physics and medicines could be false. To doubt the infallibility of the axiom of contraries, was to sap the foundation of the elementary theory of Plato and Aristotle, as well as the thereapeutics of Galen. A single man was not capable of so grand an effort: it required generations for that, as the result of this history shall show. Fernel admitted, then,

* Methodi Medendi, lib. I, cap. II.

the principle of contraries, as an article of faith; in place of discussing it with complete independence of mind, he exerted himself, only, to seek arguments to convince himself and others of its reality. Could he foresee that before an age this famous law of contraries, by which physicians and natural philosophers explained at that time the phenomena of nature, would be banished from the domain of physics and chemistry, and replaced by the law of affinities; in other words, that thereafter the composition and decomposition of bodies, their formation and their destruction, would only be explained by the affinities more or less great of their material elements? Could he presume that experimental analysis would be substituted by the chemists, at a future time, for the mental analysis of the philosophers; that the number of elements would increase in a manner indefinitely, and the qualities of the elements would no longer present the pretended antagonism imagined by the ancients? Fernel, then, had only to believe and repeat an old error which time had sanctioned, and which seemed to preclude all discussion; but he had the advantage over most of those who professed the same faith with him in medicine, of endeavoring to sound to the bottom of science, and of seeking to strengthen his faith by proofs, which, in their turn, have furnished us the occasion to refute him.

OBJECTION.

If you overturn, say some, the fundamental dogma of ancient therapeutics, if you pretend that remedies do not cure diseases by properties contrary to them, then say by what virtue do they cure: is it by properties similar to those of the morbific cause, or solely diverse? For remedies can only act in three ways—by antipathy, homœopathy, or by some virtue which may be neither antipathic nor homœopathic, but only different, that is to say, allopathic. Which one then, of these three modes of action, must we choose, in the treatment of diseases?

An ancient author, whose authority I have often invoked, answers for me this question. We read in the Hippocratic treatise on Ancient Medicine: "diseases are cured sometimes by contraries, sometimes by similars, and sometimes by remedies the action of which is neither contrary nor similar, but operate in an inexplicable manner. There is no fixed rule on this subject."

The author of the treatise "On Diseases," professes the same opinion as the above: "there is," he says, "no manifest principle of cure that may be properly termed a universal principle for every case to which our Art is applicable."*

If there is no fixed rule, then, replies our censor, Medicine is not an

* Traite de l' Ancienne Médecine, liv. I. § ii, translation of Gardeil.

Art, and the treatment of diseases is subject to the caprices of the physician; and their cure depends entirely on chance, not on the observation of rules.

This is a grave accusation, and one which has rested for a long time against Medicine. My *confreres*, I presume, will not be angry, if I make a peremptory response to it. Before there were any physicians, and before any discoveries had been made of the properties of any medicament, how were the sick treated? Every one treated them according to his fancy or instinct, or they had the counsel of some neighbor or passer by, who knew no more about it than they, not having, himself, any other guide than a very questionable experience. But when the efficacy of certain remedies had been established by repeated trials in certain diseases, thereafter they did not fail to administer the same remedies whenever the same diseases were presented. The number of known diseases and remedies then experimentally ascertained, being very much increased in the course of ages, men made a particular study of them, and collected their knowledge in a body of doctrines. Then Science and Art were constituted, and then only they began to *reason* on the *essence of diseases, and the mode of action of remedies.* This reasoning might possibly contribute to the perfection of the science, but it did not constitute it, nor form its base. The true foundation of practical Medicine was, and still is, observations, collected from age to age, from which it results, that such a mode of treatment cures, or relieves, such a species of disease more efficaciously than any other known means. If, now, it is asked, in virtue of what rational principle the practitioner is supposed to act, when he rejects the action of contraries, and the action of similars, it will be easy to respond—in virtue of that incontestible and incontested principle, that *diseases must be treated by remedies which have been experimentally recognised as the most efficacious.*

What more can be required of a physician who is called to see a patient, than that he discern clearly the affection before him, and bring to bear all the light that commemorative and present circumstances can furnish him, and that he then employ the curative means which the observation of all ages, deposited in the writings of the masters, and confirmed on suitable occasions by his own experience, demonstrates to possess the most efficacy in such a case. This is all that can be demanded of a physician, and it is of little import to the patient whether he is cured by antipathy, homœopathy, or allopathy: the essential thing for him is, to be treated by the method which experience has proved to be the best.

Thus, then, in reversing the dogma of *contraries*, we do not sap the scientific edifice of Medicine, nor do we break the chain of tradition; but

we restore the practice of medicine to its real basis, *experience*, and in this way go back to the primitive traditions, which the fictions of the philosophers had obscured. In this system—for Empiricism is one, and even the most rational, as will appear more and more, in proportion as we shall advance in this history—in this system, I say, we do not commence the science with Hippocrates, Diocles, Herophilus, Serapion, or any other celebrated physician, but we begin with the origin of time. Neither does this system conduct us to the following conclusion of a distinguished professor of the school of Paris, which I have read with alarm, and which he has let fall from his pen, doubtless, by inadvertence: "Bichat has very well established," says this professor, "that all the systems of pathology have influenced therapeutics, and as these systems were often tarnished with error, the therapeutics, which were only a consequence, and, as we may say the conclusion of them, must be equally false, bad or injurious. It is a great misfortune, certainly, but it was inevitable, and it will recur unceasingly, until the time when we shall have ideas that are perfectly correct, on the nature of diseases; and not treat diseases without having regard to their nature, which is as absurd as it is impossible."* Empiricism conducts, logically and historically, to the following conclusion, which is less absolute and more consoling and true: The knowledge of physicians in former times was very imperfect, yet they knew how to cure certain diseases. Now, we know a greater number less imperfectly, and we have still more extended knowledge of the means for their cure; and those who shall succeed us will have still more extended and sure means than ours. According to this doctrine, we do not say our predecessors had only false ideas on the nature of diseases, that is to say on the totality and corelation of their phenomena; but we say, our predecessors had notions more limited than ours, on the nature of diseases; and in proportion as the human race shall improve, it is probable that the notions acquired will be extended and perfected more and more, for each day we discover new phenomena in the diseases already observed, and new means of curing them, or to prevent some of their symptoms.

There exist, then, and there have existed from time immemorial, rules of medical practice, founded on the pure and simple observation of phenomena, independent of all interpretation, true or false, judicious or extravagant, of those phenomena; in other words, free from all speculation on the essence of diseases, and on the intimate action of remedies. These rules are not unchangeable, but they change and improve in proportion as, by more careful and delicate observation, new objects are

* Bouillaud, Essai de Philosophie Medicale, 3e partie, chap. VI, art. 1.

discovered, unperceived or neglected heretofore. Nor are rules arbitrary, for they must have been sanctioned by experience. Those who conform to them cannot be accused of acting in a hazardous manner, because they know, in advance, the probabilities of success they offer, and their therapeutics cannot be charged with being bad or injurious, because it is the best and the most successful known at the time.

I had terminated my refutation of the axiom of contraries, when I read in the translation of the works of Hippocrates by M. Littré, an extract from a work published in Germany, on the same subject. As we cannot have too much light on these subjects, when it is a question of condemnation of an opinion almost universally embraced by antiquity, and sustained to our day by respectable authorities, I have been charmed with the reading of this work, which arrives at the same conclusion as my own, though elaborated in a different way, and presented under another color. I give the remarkable fragment as M. Littré has reproduced it, and I hope it will afford the same pleasure to my readers as to myself: "We think we are able to sustain," says M. F. W. Becker, "that the *hypénantiose*, or the principle *contraria contrariis curantur*, does not rest on experience, free from hypothesis—that it originated in the mechanico-chemical manner, in which life was supposed to exist, and thus it falls with this view. When an opposition seems to exist between a disease and the remedy, it is only in appearance, and not in reality. We propose to establish this by examples drawn from the different methods:

"We observe that an indisposition produced by a surcharge of the stomach is cured by dieting; that a disease of the skin produced by uncleanliness, is cured by bathing; that a man fatigued by excessive efforts, is refreshed by repose. At the first glance it certainly seems, that there is, here, an opposition between the disease and the treatment; but, in fact, the cure is the result, not of a veritable opposition, but of the removal of the cause which produced the evil, or aggravated it, and of the restoration of the organism to a condition favorable to the exercise of its recuperative powers.

"We see, also, that the end of the treatment is obtained by arousing or re-exciting, by external means, the diminished or suspended function: constipation is cured by evacuants; atonic ulcers are put in the way of cure by exciting ointments; a fever, with a small pulse, is cured by the use of wine, which excites a fullness of the pulse. These are some of the phenomena which have been brought forward to prove the principle, *contraria contrariis curantur*. But it is easy to prove that in any one of these cases, or in others to which the method termed excitant is applied, the vital activity is not absolutely augmented. All these

modes of treatment are not founded on the opposition of the medicament to the disease, but on the result of experience—particular and very important physiological results, namely, that the organism, when an action is excited in it, produces, at the same time with this action, and on account of it, similar or identical actions. It seems, that when a function is morbidly increased, the cure must be sought in the diminution of that activity; and it is pretended that there is *hypenantiose* in such a case. But the functions, in such a morbid state, are the objects of a depressing, sedative treatment, not because they vary from the laws of health, but simply because they become the occasion of other morbid states, which menace the organ, or the organism. We do not arrest a diarrhea with opium because the intestinal evacuations are more frequent or more abundant than in a state of health, (for many diarrheas may be left to the control of nature, and some are even treated by purgatives,) but we give opium in the case when we have reason to fear the prolonged evacuations may determine an inanition, or the exhaustion of the entire organism. We do not prescribe digitalis, which reduces the pulse, because the pulse is frequent, (for in every accession of fever, when the pulse is no less frequent, we do nothing for the symptom,) but simply in cases where the shock of the blood excites the fear of a derangement in the movements of the liquid, or in the texture of the heart, vessels, or lungs.

"Besides the three classes of curative methods indicated thus far—dietetic, excitant, and sedative—all of which have a direct relation to vital activity, there are still two others, namely, those which act immediately on the mass and the movement of the blood, (as emission, infusion, transfusion, hæmostasis, ligation, etc.,) and those which change the form of the solid parts, as surgical operations. To these two classes, the principle *contraria*, etc., is as little applicable as to the preceding ones, and we have always particular ends in view, which are attained by the immediate action, on the liquid or solid substances of the organism.

"If, then, *contraria contrariis curantur* is not founded on pure experience—if it has the appearance of truth only in the eyes of those who mistake the true connection between a disease and its cure—how is it, that this principle, which has been so universally recognized, from the ancients down to Paracelsus, has, notwithstanding its victorious refutation by reformers of past times, assumed again an authority so general? We think the reason may be found in the necessary connection in which *hypenantiose* stands, as a therapeutic principle, with the mechanical and chemical manner in which most objects in physiology and pathology are represented. This mode of representation, though

refuted in different ways, in its primary and grosser forms, and replaced by organic Medicine, is still frequently reproduced in medical history, in other forms, less definite, and, it appears, more scientific. The *hypenantiose* which constantly accompanies it must maintain an extraordinary influence, and we are led to think, that this influence will be abolished, only when it shall have been understood what is the subordinate rank which mechanics and chemistry hold in physiology." *

Another reason why the principle, *contraria contrariis curantur*, preserved, and still preserves much of its authority, notwithstanding its more or less victorious refutation at different times, arises from the fact that its adversaries have substituted nothing which can take its place. Now, in a science of daily and urgent application, like Medicine, it does not suffice to prove that a doctrine is doubtful, or false, or incomplete; it is necessary at once to present in its stead one surer, truer, and more general; this is what no one has yet done, not even the author of the extract I have just quoted, who thinks that the *hypenantiose* will not lose its influence until it shall be in accordance with the subordinate rank that mechanics and chemistry hold in physiology, which is probably to await the coming of the Greek Kalends. The animists, vitalists or modern Hippocratists, have attempted to substitute for the axiom of *contraries* that of coction and crisis, or the autocratism of nature; but we shall demonstrate, in the next period, that the theory of the autocratism of nature is very far from embracing all cases of cures, all modes of treatment, and we shall then propose another therapeutic axiom, more sure, more evident, and more general than any of those that have been proposed up to this time.

After this somewhat long, but necessary digression, in view of the importance of the subject, I return to the examination of the therapeutic doctrine of Fernel. The second precept which this author gives, relates to expectorant medicine, which seems to me is worthy of all approbation, as it circumscribes the employment of that method within just limits. When a disease, he says, is not well known to you, and you do not see clearly its nature, do not be in haste to apply remedies; let nature conduct the case for a season if there be no urgency, for nature, aided by a suitable regimen, will cure the affection, or declare its true character. A doubtful and vain medication is nearly always injurious. In fine, if you are forced to attempt something, do it with circumspection, in such a way as not to cause a grave prejudice to the patient.

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* Berliner Med. Zeitung, 1834, p. 15. Œuvres Hippocratiques, T. IV, de M Littré, p. 520. Aphorismes, Argument, § 13.

Another recommendation on which Fernel insists very much, is, to endeavor to destroy the cause or causes of any disease, before attacking the disease itself. This recommendation forms one of the capital points of his therapeutic doctrine, and he sustains it by considerations that may be thus summed up: While the cause of a disease exists, the affection derived from it can not be completely uprooted—it recurs unceasingly; on the other hand, after the extirpation of the cause, the disease will often cease of itself, unless it be too inveterate. Again, it must be remarked that there is, in certain affections, not a single cause, but a series of causes, which it is necessary to destroy successively, according to the order of their development, that is, to commence with the first, or oldest, and finish with the last, or most recent. This, exclaims Fernel, is what is termed a methodic cure, a cure which does not consist simply in the employment of such or such a remedy, but also in the manner and order of proceeding.*

He quotes, in the same chapter, several examples of this curative method, from among which I extract the following, which is one of the most simple. Suppose that by prolonged use of a diet too heating, there should be formed in the stomach an acrid chyle, which, carried to the liver, creates there an excessive quantity of bile and vicious humors. These, after having passed from the great veins into the less, are easily vitiated, and give rise to all the symptoms of fever. Now it is certain that we can not calm the symptoms of this fever without having previously evacuated the putrid matter which gives rise to it. To eliminate properly the putrid matter, it is necessary to commence by drying up the source whence it flows; that is to say, the excess of bile and vicious humors engendered by the liver. Finally, this excess of humors being due to an impure chyle formed in the stomach, it follows: first, that we must suppress the evident causes that give rise to the formation of bad chyle, in other words, change the heating diet; second, purge the mass of vicious humors arising from the putrid matter; third, evacuate this; fourth, and lastly, suppress the excess of unnatural heat, if it still remains, whether in the liquids or solids.

What a chain of causes to follow, and how many indications to fulfill in the cure of a simple fever! What would it be when one had to treat a somewhat complex disease, or a complication of several diseases? How could we untangle the inextricable interlacement of causes inaccessible to observation? To return to the example cited by Fernel, I will ask, by what kind of investigation is he assured that the symptoms of a simple fever are due to that series of intimate causes or phenomena

* Methodi Medendi, lib. I, cap. IV.

which he paints as if he had seen them? Did he follow the course and development of these phenomena in the interior of the living economy, or at least, did he find the incontestable traces of them on the cadaver? Not at all. Some ancient physiologists had figured to themselves that these things occurred thus, and those who followed them were contented with this explanation, having none better to offer. In this way has the doctrine of occult causes and the essence of things been sustained. This doctrine was generally admitted, because it emanated from the reigning philosophy, as we have already shown, and because it flattered the pride of the human mind. Indeed, it seems to initiate us into the most intimate mysteries of the animal economy; but in reality, it offers us nothing but fictions.

In the above example Fernel considers only a single order of causes, while in his pathology he admits, truly, a frightful number of them. There are, he says, according to the philosophers, four sorts of causes, viz: the material, the formal, the efficient, and the final. The human body is the material cause of all diseases; that is to say, the subject in which our diseases necessarily reside. The appearance under which a morbid affection presents itself, the form with which it is clothed and which determines its species, is its formal cause; the end towards which it tends is its final cause, and this end can only be suffering or death. Finally, the efficient cause of a disease, that which it most imports the physician to understand, is nothing else than the force which modifies the body and causes it to pass from the state of health to that of disease. The author afterwards divides the causes in several other ways, which would be too long for me to enumerate, and I shall only report the subdivisions of the most important of all—the efficient cause:

1. The efficient cause is divided into congenital and accidental.
2. The congenital is either natural or unnatural.
3. The accidental may be exterior or interior.
4. The interior accidental is divided into antecedent and continent.
5. The efficient cause produces its effect sometimes immediately, that is to say, by itself; sometimes in a consecutive manner or by accident.
6. Finally, the efficient cause is divided into the principal, adjuvant and indispensable. For example, when we administer a drastic, the principal efficient cause of the purgation is the purgative virtue of the medicament; the adjuvant are the various substances that are added to the principal medicament—the preparation to which it is submitted; the indispensable is only the natural heat of the body, without which the virtue of the remedy is inoperative.*

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* Pathologiæ, lib. I., cap. XI. et XII.

What a rigmarole! Does it not seem as if they had undertaken the task of surcharging science with idle considerations, so as to render it unintelligible and ridiculous? Unfortunate were those patients, who fell into the hands of recent graduates, from whose minds clinical experience had not yet removed the jargon of the schools! What may be said most favorable of the physicians of those times is, that they soon unburdened themselves in the presence of their patients, of their theoretic baggage, and contented themselves with treating each case of disease with remedies that had succeeded best in analogous cases, without troubling themselves with abstruse questions in regard to their pathogeny. They reserved this pretended scientific lumber for the official dissertations of the schools or for books. In short, we can only justify the medical practice of past ages in the eyes of the present generation, by admitting that these physicians followed, in their treatment of diseases, not the illusory indications of physiological theories, but the positive facts of a rational empiricism.

Fernel reduced to three genera all methods of medication; namely: first, evacuate the excedent of the humors; second, purge, or in other words, purify the humors; third, alter, that is, restore to the normal state, the parts which have been vitiated in their temperament or their composition. He examines in detail the effects of each of these plans of treatment, and the various modes of instituting them.

### ON EVACUATING MEDICATION.

There are two modes of evacuation, says Fernel, the one general, the other particular. The first mode draws the humors from all parts of the body, as the sweat, sanguineous emissions, vomitings, and alvine dejections. Vomiting, for example, discharges first the stomach, then the larger veins, afterwards the veins of small calibre, finally, the whole body. The sanguine emission empties at first the veins and the arteries, which anastamose with them; lastly, the mass of the body and the viscera. Perspiration evacuates first the mass of the body; next, the great veins and arteries; finally, the viscera and deep-seated parts.*

A particular evacuation is that which relates to a special region or organ. Thus, the excretions of the nose and palate relieve the brain only; cough and expectoration, the lungs and chest. So the rectum is relieved by a hemorrhoidal flux; the uterus, by the menses; the kidneys, by the sand or the pus mingled with the urine; the belly, by a clyster or a supository; the whole superfices of the body, by a cutaneous eruption. An artificial issue may be placed in any region whatever.†

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* Methodi Medendi, lib. II., cap. II. † Loc. cit.

Of all artificial evacuations, that of phlebotomy is the most powerful, according to Fernel, because it withdraws the venous blood, which contains the four principal humors—the bile, pituite, atrabile, and the pure or impure blood. It is applicable in all cases of plethora, either simple, or accompanied by cacochymy. The author raises *apropos* to blood-letting, the following questions: What are the immediate and secondary effects of blood-letting? How does it operate—by revulsion, or derivation? What are the diseases which claim its employment? Is it more advantageous before or after the invasion? What vein is it best to choose in a given case? What is the utility of a spontaneous sanguineous discharge? What are the indications for blood-letting, and of the quantity to be drawn? At what period of the disease, or on what day, and at what hour, is it best to practice phlebotomy? How shall the patient be prepared for it? How must the physician act, before and after the operation?

### DERIVATION AND REVULSION.

The question of derivative and revulsive bleedings has been a matter of controversy, for a long time, among physicians, but it has lost much of its interest since the discovery of the circulation of the blood. At this time the words derivation and revulsion are indifferently employed, or rather, between the two there is only an insignificant shade of difference. The veritable demarkation between derivative and revulsive blood-letting, says M. Guersant, Sr., is a scholastic subtilty, which originated, at first, among the Dogmatists, who departed more and more from the observation of nature. A little further on he adds, "these distinctions between derivation and revulsion, are purely systematic and abstract, and do not rest on any positive differences. We cannot even admit an essential difference between words which, having the same etymology, must be regarded as synonymous."* The ancients, on the contrary, attached to these words very distinct significations, founded on the errors in anatomical and physiological science, which time has since corrected, but of which it is necessary to have a notion, in order to conceive of the importance which they put on the distinction of these two things, and the history of their long disputes on the subject.

Hippocrates and Galen had given the precept to bleed largely from the arm, on the diseased side, in pleurisy and peripneumonia. They directed, even, that the blood be permitted to flow till syncope was produced. That practice was gradually abandoned, when the sound traditions of Greek Medicine began to be lost sight of; finally, the Arabs substituted for it one entirely opposite; they prescribed pricking slightly

* Dictionnaire de Médecine, in 21st vol., at the word DERIVATION.

the vein of the foot, to let the blood flow drop by drop. Their method prevailed throughout Europe, until the commencement of the sixteenth century; then, a pleuritic epidemic having appeared several times in the capital of France, a physician of Paris, named Pierre Brissot, distressed to see the most of his patients perish, and encouraged also by reading the Greek authors, dared to revive their practice. The success he obtained filled him with enthusiasm; he hastened to publish it, and proclaimed boldly the superiority of the method of Hippocrates to that of Avicenna.*

This created a great uproar in the medical world. The innovation found partisans and adversaries, equally bitter. The dispute grew warm; on both sides learned papers appeared, which gave no new light, and persuaded no one. The Arabists clamored that they were slandered, and that the other side was heretical, so that but little was wanting in Spain, to invoke the *auto-da-fe* for the defence of the Arabic method. Nevertheless, the contrary method triumphed, less, perhaps, because clinical observation sustained it, than because the fashion changed from Arabia to Greece. However this may have been, the question was nearly settled at the epoch when J. Fernel wrote; but it was not extinct, and preserved something still of its vitality. On this account he discusses it very thoroughly, and conformably to the ideas of the times. I will now give the substance of what he says on the subject: When the blood makes an irruption on any part, the promptest means to repress its impetuosity consists in evacuating it in an opposite direction, from the most distant point possible; in other words we must operate by revulsion; for the most natural course of the humors is in a direct line, especially in the veins, whose longitudinal fibers have the property of attracting the liquids. Now, the veins of all the right side of the trunk are continued into the right arm, and the veins of the left side into the left arm. Thus, then, in pleurisy and pneumonia, we must open the vein in the diseased side, as taught by Hippocrates, as well as by reason. In hepatitis the bleeding is always from the right arm.

It is not the same for the pelvic members; they, being in direct communication with each other by their veins, when there is an inflammation in the right leg, the revulsion must be made by bleeding in the left foot and *vice versa.*

Derivation is effected by attracting the humor toward a point near the affected part. To accomplish it, that vein is opened which communicates

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* Apologia qua docetur per quæ loca sanguis mitti debeat in viscerum inflammationibus, præf. in pleuritide. Paris, 1525, 4to.

with the point itself, and we thus direct to the orifice sometimes the nutritious juice, and sometimes the bad humor that keeps up the disease. Then the excess of humor, running off at the opening established, relieves very much the diseased part, especially if care be taken, previously, to moderate the impetuosity of the fluxion by a revulsive bleeding. But if the engorgement is such that the humor can no longer flow, which happens in inveterate inflammations that turn into scirrhus, derivation must be attempted, not by phlebotomy, but by fomentations, emollient plasters, and digestives.*

From the errors, obscurity, and anatomical nonsense disseminated in this chapter of Fernel, we can judge that the question of revulsive and derivative bleedings was far from being clear at an epoch when it was thought to have been entirely resolved. We see here, also, an example of the facility with which the most sagacious minds satisfied themselves with explanations where they knew absolutely nothing.

Fernel speaks, in the same book, of the effects of local blood-letting, which is effected by leeches or scarifications, either with or without the aid of cups; he explains, also, succinctly, the physiological effects of diet, exercise, baths, sweating-rooms, anointings, and frictions; for such are the means which, according to him, evacuate insensibly all the humors of the body.

### II. PURGATIVE MEDICATION.

The third book is devoted to the explanation of this sort of medication. Now, we know that by purgative medication is understood all the means proper to provoke the evacuation of a peccant humor through any channel. Thus, vomits, cathartics, drastics, sialagogues, errhines, expectorants, etc., were comprised in the number of purgative medicaments. In this sense, to purge signifies, as we have said, to purify the economy—to relieve it from any injurious humor.

We can conceive how much importance this kind of treatment had in a pathological system, where nearly all diseases were supposed to originate by the excess or vitiation of some of the humors of the body. We are not astonished, then, that our therapeutist speaks of it with so much detail. He professes, in regard to this class of remedies, the opinion of Hippocrates and Galen, who assumed, as has been heretofore shown, that certain substances have the property of attracting such and such humors: some, the bile; others, the atrabile; others, the phlegm, etc. He unfolds, very skillfully, this theory, and supports it by arguments more subtile than solid.

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* Methodi Medendi, lib. II, cap. V.

### III. ALTERANT MEDICATION.

The fourth book treats of alterant medication; that is, of a medication destined to modify the state or temperament of parts. That is termed a medicament, says our author, which has the faculty of changing the natural constitution of the body in any way whatever. Now, there are, in medical substances, three sorts of faculties, which are considered as primitive, secondary, and tertiary. The primitive qualities depend upon the preponderance of one or two elements. The substances, for example, in which the igneous element predominates alone, are simply hot; those in which fire and moisture exceed, are hot and humid, and so on. These primitive qualities constitute what was formerly named the temperament of substances.

The secondary qualities result from the union of the primitive qualities with the greater or less density of substances. In regard to density, a substance may be tenuous or thin, thick or gluey, or medium—that is, between the two extremes. The combinations of various degrees of density with the temperament or primitive qualities of substances, form the secondary qualities, of which, according to Fernel, the following are the chief: the incisive or attenuant and the incrassant, detersive and inviscant or emplastic, the exasperative and demulcent, the aperient and obturative, dilatant and constrictive, rarefiant and condensing, laxative and tonic or confortant, the attractive, digestive, dissolvent, repulsive, emollient, astringent, maturative or supurative, septic, agglutinative and exulcerant or vesicant, sarcotic and corroding, epulotic, escarrotic or caustic.

The savory, having the same origin as the secondary qualities, are the best indicators for these. There are nine sorts of this kind that are distinguished by the taste, namely, the pungent, the acid, the greasy or mucilaginous, the saline, the astringent, the sweet, the bitter, the acrid, and the insipid. The pungent taste, for example, which is remarkable in pepper, pillitory, and euphorbia, indicate the tenuity of matter, united to a dry and hot temperament, for all that is acrid and biting partakes of the nature of fire. Fernel explains, in the same manner, the connections which he believes to exist between the taste of the above named articles, and the corresponding secondary qualities; but we shall not follow him in the details of this more curious than useful theory.

The tertiary qualities of medicaments proceed neither from the temperament, nor the density of the substance, but from its mass and form. For this reason, these qualities are denominated the occult properties of the entire substance. Properties of this class are not manifested either by the taste or any sensible quality, but by experimenting. Thus, it is by experiment alone, that certain medicaments are ascertained to have

the property of attracting and evacuating from the body a particular humor, such as diuretics, which provoke the emission of urine, cholagogues, which increase the flow of bile—hydragogues, errhines, emmenagogues, emetics, drastics, etc. Others neutralize and expel animal and vegetable poisons, such as alexiteric or alexipharmics. These various agents produce the effects that we have just enumerated, in virtue of an occult principle, depending upon their substance and form, which principle, clinical observation only can reveal.

If we wished to establish a species of comparison between antique and modern science, we could say that the primitive qualities of the ancients respond, in some sort, to our chemical properties; their secondary qualities to our physical ones, and their tertiary to our specific medical properties. But the existence of most of the primitive and secondary qualities of the ancients, is purely fictitious and nominal; their classification is confused, their origin imaginary: for it all rests on the mental analysis of the philosophers, and not on an experimental or empirical analysis, like that of our modern chemists.

As regards the faculties which are named tertiary, they have generally more reality, and their denominations have been, for the most part, preserved in medical language; because they are founded on clinical observation. It is not questionable that there are remedies which excite alvine evacuations, others that increase the flow of urine, others that excite the menstrual flux, others the saliva, etc. These substances, it is true, do not produce their effects in an absolute and necessary manner, but only under given circumstances, that is to say, when the individual to whom they are administered combines certain favorable conditions. It is the same with other medicinal properties; they are nearly all conditional, which, however, does not prevent us from classing and giving them names; so that, whatever may be the physo-pathological theories in vogue, we shall always have substances which are cathartics, diuretics, emmenagogues, sialagogues, errhines, etc.

The ancients, by abstaining from giving any explanation touching the nature and origin of this order of faculties, and by saying that experience alone could determine them, showed themselves more than usually wise and circumspect. They have emitted, on this point in the science, a reasonable doctrine which no scientific revolution has yet overturned. They may be reproached only for not having been sufficiently critical in their clinical experiments—for having too carelessly attributed to a mass of substances, admirable virtues, which the observations of succeeding ages have not confirmed: so that, before inscribing in their formularies that a given substance was endowed of certain properties, they should have submitted it to repeated and varied experiments—they

should have, in a word, conformed themselves to the excellent precepts given by the Empirical physicians of the school at Alexandria.

Fernel shows, in the same book, the reasons which may justify, in many cases, the employment of compound remedies, and he lays down the rules which must be observed in the process of mingling various substances. He enumerates the pharmaceutical and magisterial forms, in which they were accustomed to administer medicaments, as well as the particular advantages attached to each of these forms. He speaks, among other preparations of distilled waters, essential oils, infusions, decoctions, extracts, syrups, powders, conserves—in short, of nearly all the preparations now used in pharmacy and medicine. The last three books of the same work, namely, the fifth, sixth, and seventh, embrace materia medica proper, and a small formulary. The medicamental substances are there classed according to their mode of action on the animal economy, that is, according to the physiological effects they produce in the organism. This basis of classification would have been excellent, if the action of remedies had been established on careful clinical observation; but we have seen that of the three orders of faculties, the first two were imaginary or hypothetical, and the third only was founded on medical observation. Unhappily, yet, the observations which had served to establish the third class of faculties were not always made with proper care. Thus, therefore, among the virtues attributed to medicamental substances in the ancient formularies, the greater part should be regarded as hypothetical, exaggerated, or false.

The judicious Fernel had well felt this defect, and he alludes to it in the preface of his fifth book, where he says that he will admit into his materia medica only such substances as are well proved by long experience; preferring a small number of well known and well studied remedies, to a great number of doubtful ones. Nevertheless, he assigns to many of the substances, properties which are entirely imaginary; because, to avoid this defect, he would have found it necessary to have reconstructed science, which is the work of ages, and not of one man alone. He does not mention some substances from the mineral kingdom, newly introduced into medicine, such as certain salts of antimony, mercury, gold and copper. The effects of these energetic agents, which now render such signal service in medicine, were at that time but little known. They were scarcely employed, except in the hands of charlatans, barbers and alchymists, who administered them, right or wrong, without precise indications or in proper doses, so that their use did more harm than good. We must, then, approve the circumspection of Fernel, which led him to exclude from his formulary these powerful remedies, yet too little tested, when we reflect that he was placed at the head of

medical teaching—that his book, destined for the instruction of young men, became classic throughout Europe, from its first appearance—and that these heroic remedies, which may be employed by a skillful hand without danger, produced, at that epoch, effects nearly as formidable as those of the disease against which they were administered, as the result of the ignorance and temerity of the medicasters who proclaimed them to be panaceas.

## CHAPTER VII.

### EXTERNAL PATHOLOGY AND THERAPEUTICS.

In all time, external pathology and therapeutics have surpassed in progress, the career of internal pathology and therapeutics. It is a law that holds to the nature of things. External diseases are more easily discerned than internal; they may be better observed from the commencement, with their progress, phases, and various modifications. The remedies can be applied immediately to the parts affected, and their effects be observed with exactness. All these advantages in favor of surgery render it more permanent than Medicine, so that its progress is more constant and certain.

Nevertheless, this law appears inverted during the middle ages. In the midst of the general decadence of the sciences in Europe, surgery fell yet lower than medicine, for the reason that the latter was in the hands of the priests, the only men who had, at that time, a tincture of a liberal education; while the practice of surgery was abandoned to a class of ignorant barbers, bathers and bone-setters. I will mention one fact, which will give some idea of the extreme contempt in which this class of operators was held. "No artisan," says Sprengel, "could take a young man as an apprentice, without an attestation showing that he was born of honest parents, the fruit of a legitimate marriage, and the issue of a family in which there were neither barbers, bath-keepers, shepherds nor butchers; nevertheless," says this historian, "these men were, to the middle of the fifteenth century, the surgeons of most of the cities in Germany. The other countries of Europe were but little more advanced than Germany, with the exception of Italy, where, as we have seen, from the thirteenth and fourteenth centuries, several physicians did not disdain, entirely, surgical operations; and France, where Lanfranc and Guy de Chauliac gave it a temporary éclat towards the close of the Arabic period. But these rare exceptions did not prevent

surgery in France, and even in Italy, as in Germany and the rest of Europe, from being abandoned completely by the clergy, who devoted themselves to the practice of Medicine.

If it be now asked how it was that an art as useful as the surgeon's—the practice of which requires extended and various knowledge, as well as sagacity, courage and address—an art, the necessity of which must have been so frequently felt in those calamitous times of continual war and combat, and the services of which are so much more manifest than those of internal therapeutics—was so neglected by men who could best comprehend its utility, namely, the doctors in medicine, the response is easy, and our readers can make it themselves, by recalling what we have said of the constitution of society in general, and the medical profession in particular, during the middle ages. The Christian nations of the West were at that time divided into three very distinct orders, namely: the noblesse, unceasingly at war; the clergy, filling all the liberal professions; the populace, in all the lowest occupations, supporting all the rest, but having no privileges. In this division, the practice of the Healing Art was a clerical right; but, as we have before observed, a canon of the Church prohibited them from drawing blood, under pain of excommunication; consequently the most of them abandoned the practice of surgery to the ignorant and vulgar laity, who acquitted themselves in it as a pure mechanical work, without any idea of the art or its progress.

Another reason, no less powerful, also removed the clerical doctors from the practice of surgery; it was the lack of all detailed and precise anatomical notions, which are as indispensable to the physician as the surgeon, but the defect of which is more sensible and opprobrious in the latter. The absence of anatomical knowledge was, it is true, common to both the clerical doctor and lay operator, but the latter, being less enlightened, did not feel so much its need; being also less elevated in the social hierarchy, he had less fear of compromising himself. Moreover, a great number of the operators had no fixed residence; they went from city to city, and stopped in each place as long as they had any cases submitted to them, or until some reverses forced them to depart. The most of them limited themselves to one or two sorts of operations; some operated for cataract, others for stone, others for hernia, etc., according to methods which they kept secret, and which they transmitted to their children as an heritage. The History of Medicine has preserved the names of some of those families of itinerant operators, such as the Branca, the Norsini in Italy, and the Colot in France.

In hands so unskillful the art could not grow, and the profession must be mean. Neither began to revive until the prejudice which opposed

anatomical dissections, and which prevented physicians from practising surgery, began to abate. But this revolution was effected very slowly. The dawn of it began from the thirteenth to the fourteenth centuries, during which a very few of the clergy dared, in a timid manner, to perform surgical operations. The number increased in the course of the fifteenth century, and at last became considerable, in the sixteenth. The most of the great anatomists of that period were at the same time distinguished surgeons, such as Benivieni, Bérenger de Carpi, Vesalius, Fallopius, Fabricius d'Aquapendente, and others.

While the clerical physicians were willing to descend to the rank of operators, the lay surgeons aspired to the level of doctors in medicine. This latter transformation took place especially in France, the only country where at that epoch there existed a special college of surgeons. This college was no other than the small brotherhood of St. Come, which, always contending against the faculty on one hand, and the barber-surgeons on the other, sometimes defeated, sometimes triumphant, but never submissive, asked at last a peace with the university, and was benignly received by it among the number of its scholars, and enjoyed thereafter without molestation the privileges and immunities attached to this title. This took place in 1515. "From that moment," says M. Malgaigne, "a new state of things commenced for surgery in Paris. The Faculty reigned over the surgeons and barbers, who were admitted together to their lectures. The barbers followed the course on anatomy and surgery, which gradually drew them nearer to the surgeons of St. Come, and prepared them to wear worthily their new title of barber-surgeons. But they did not obtain these unexpected results without giving up some of their former rights. Thus, besides their initiation by a proper tribunal, to the privilege of barbering, they had to pass an examination before the physician and the two surgeons of the king, at Chatelet, for the right to practice surgery. The surgeons, as the price of their submission to the faculty, had, then, besides the university privileges, acquired a sort of supremacy over the barbers; also, their daily association in study and hierarchy, dissipating the memory of old divisions, prepared for the new epoch results which perhaps never before took place; the barbers were admitted to the rank of surgeons of St. Come, and the surgeons of St. Come were admitted as doctors regents of the Faculty of Medicine.*

Thus surgery offers during this period a double upward movement, on one hand it approaches as a profession medicine proper, from which it should never have been separated; on the other, it received as an art

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* Introduction to the works of A. Paré, t. I., p. 153.

numerous improvements. Among the men who contributed to extend it, we have already cited the names of some celebrated anatomists; to these we will add those of John de Vigo, Fabricius of Hilden, Maggi, Peter Franco, Felix Wurtz, Jacques Guillemeau, and above all, that of Ambrose Paré, who from a simple journeyman barber, elevated himself by obstinate labor and his genius to the rank of the first surgeon of his age.

The life of Ambrose Paré is so closely related to the progress of surgery during that epoch, that by tracing it we give, in some sort, the history of its progress. On this account I do not think I am leaving my subject, by extracting from his biography the passages which connect him most directly to the history of the art itself. Ambrose, born at Laval, of parents not in easy circumstances, did not receive a university education, having never learned the Latin, the only language at that time in the books and schools of Medicine. The date of his birth, though uncertain, must have been between the years 1510 and 1517. His first apprenticeship was to a provincial barber-surgeon, after which the desire for improvement led him to Paris, about the year 1532 or 1533. He studied for three years at the Hotel Dieu in that city, and it appears that he obtained so fully the confidence of his masters, that they sometimes made him perform their operations. Paré loved to recall his sojourn in that hospital; he counted it among his highest honors, which permits us to presume that these functions were coincident only with important duties, and even not a common right nor an ordinary favor. "Be it known," he says in his Preface, to the reader, "that for the space of three years I resided at the Hotel Dieu of Paris, where I had an opportunity to see and know (owing to the great diversity of patients going there) everything that concerns operations and diseases pertaining to the human body; and besides, I learned there, on an infinite number of bodies, all that can be said and considered on anatomy; also, that often I made very satisfactory proofs of it, and that very publicly, in Paris at the schools of medicine." And in his Apology, when a physician of Milan seemed astonished at the young man's knowledge, he remarked, not without some pride, "*But the good man did not know that I had been house-surgeon for three years at the Hotel Dieu of Paris.*"*

In regard to the functions of these barber apprentices in the hospitals, and the kind of instruction they received there, we have no positive knowledge, but it is probable that they made the dressings, bleedings and post mortems ordered by the master surgeon—that they assisted him in his operations, and perhaps took his place in cases of urgency, about

* Introduction to the works of A. Paré, t. I., p. 232.

as commonly as the *Internes* do in our hospitals at present. They learned by watching the operations of their chief—by listening when they deigned to converse with them, and by carefully studying the patients. They found there, also, opportunities, precious and rare at that time, for anatomical dissection; but it does not appear that they had any regular instructions in clinics—the communications between the master and his pupils being optional, depending absolutely on the pleasure of the former.

It was not long after his leaving the Hotel Dieu, in the year 1536, that Ambrose made his first campaign. He held the position of surgeon to the Marshall de Monte-Jan, colonel-general of the French infantry, of the army which Francis I. assembled in Provence to repulse the invasion of Charles V. "He had never seen war, nor recent gun-shot wounds, and only knew of them by what he had read in John de Vigo. I shall not repeat what he has so well recounted himself; it should be read both in his first discourse, in the book on Arquebuse Wounds, and in his great apology, how, after the affair of the Pas-de-Suze, he watched the other surgeons, dreaming of nothing else but to imitate them as far as he could; how the boiling oil giving out, with which all wounds were cauterised, anxiety about it prevented him from sleeping soundly, and how, to his great admiration, he found that the wounded who had been submitted to the operation, suffered more than the others. This accident put him in the way of his first discovery: but the rapidity and depth of his judgment, and the boldness of resolution which led him, a young man, without name or authority, and moreover, without letters or philosophical studies, at once to observe, to point out, and combat a doctrine universally admitted and sustained by the highest surgical renown of the epoch, was not an accident."

The earliest authors who had spoken of gun-shot wounds, considered them as poisoned, and complicated with burning. Consequently, they gave the precept to cauterise them with boiling oil, or red hot iron, and administer internally at the same time alexipharmics, for the purpose of arresting the progress of the poison. John de Vigo, who was physician of Pope Julius II., assures us that the danger of these wounds results from the round form of the balls, their degree of heat, and the poisonous qualities that the powder communicates to them. His theory, and the method, doubly incendiary, which was its necessary consequence, had been adopted without contradiction, till the day that Ambrose Paré dared protest against them.

After a campaign of three years, having lost his master, he returned to Paris, where he married the daughter of the valet-chauffe-cire of the Chancery of France. In 1543, we find him with the army of Perpignan,

in the service of M. de Rohan, grand lord of Brittany, and he gave proofs there, on several occasions, of his sagacity. "I presume," continues M. Malgaigne, "it was after this campaign that his reputation, so well established among warriors and great lords, inspired Sylvius with the desire of seeing him. In fact, Paré recounts that in the conversation they had together, he insisted on the special and entirely new precept, of which he made so happy an application on M. Brissas, that of placing the wounded in order to extract balls, in the position they were at the moment they were shot. This interview was honorable in all respects to both. Sylvius, whose teachings attracted more auditors than those of Fernel, even invited the young surgeon to dinner, and heard, with great attention, the observations and experiments on which Paré had established his doctrines on gun-shot wounds, and was so much struck with them, that he besought him with great warmth, to write them out, and make them public. Paré felt, sensibly, this encouragement coming from so high a source, and prepared his text, drew the figures, and in the year 1545, at Vivant Gaulterot's, sworn bookseller in the University of Paris, that little work, which marked in a manner so glorious the revival of French Surgery was published, with the following title: *The Manner of Treating Wounds made by Arquebuses and other Fire Arms, and those made by Arrows, Darts, and the like; and also of Burns made especially by gunpowder:* Composed by Ambrose Paré, Master barber-Surgeon, Paris.*

"In a few months Paré published his second edition, in which he recommends still, the actual cautery in hemorrhage; but each day he made it a subject of meditation, and on one occasion he discussed the subject with Stephen de la Riviere and Francis Rasse, both surgeons of Saint-Come, and submitted to them the idea, so simple and so luminous, that since ligatures were applied to veins and arteries in recent wounds, there was nothing to prevent their being equally applied after amputation. Both agreed with him, and he only needed the opportunity, which soon presented itself at the siege of Damvilliers. A gentleman of M. de Rohan had his leg crushed by a shot from the fortress. Paré made an amputation, and for the first time did not apply the cautery. He had the happiness to save his patient, who, full of joy at having escaped the red-hot iron, said that he had got clear of his leg on very good terms. This last discovery was not less fortunate than the former, of which it was, if I may say so, the complement. By the first step the young surgeon saved from cauterization all who had simple gun-shot wounds; by the second, he spared all subjects of amputation dreadful

* Introduction to the works of A. Paré, p. 236.

suffering. Military surgery, which till that time had been a torture, became a blessed art, and it was a barber-surgeon who produced the double marvel." *

This took place in 1552. In the month of October, in the same year, one of the most eminent of the generals of Charles V. having besieged Metz, the Emperor came in person to join the army, on the twentieth of the following month. "The city, defended by the Duke de Guise, with seven princes under his orders, and a number of gentlemen, had to suffer at the same time the attacks of the enemy, the fatigues of the siege, and the rigors of a frightful winter. The Duke had established two hospitals for the soldiers. He had put in requisition the barber-surgeons of the city, and had even advanced to them the money to get supplies of ointments and drugs; but the ignorance of the surgeons unfitted them to struggle against a combination of circumstances so unfavorable, and nearly all the wounded perished, which caused a suspicion among the troops that they were poisoned. The Duke de Guise dispatched one of his captains, named Thomas Delveche, to the king, to say, that the place could hold out for ten months, but asked, at the same time, for fresh medicines. The king sent for Paré, handed him one hundred crowns, and directed him to take all the medicine he thought necessary, and gave him also a letter to Marshal St. André, who commanded in Verdun. The Marshal and M. de Vieille-Ville bribed an Italian captain, who engaged, for fifteen hundred crowns, to introduce into the besieged city, A. Paré, his valet, or his man, and the captain of the Duke de Guise. The expedition was perilous, and, to tell the truth, says our naive author, he would very willingly have remained in Paris. He passed, however, without accident, and the little caravan entered Metz the eighth of December, at midnight, by the Moselle gate. He was known to the chiefs and common soldiers, for he had already passed sixteen years in war, and enjoyed the highest renown in military surgery. The next day after his arrival, the duke, who knew how to strike the imagination, presented him on the rampart to all the princes, lords, and captains, who embraced and received him with acclamations. On the same day he began to treat the leg of M. de Magnane, who for four days had been in charge of a charlatan, and had suffered horrible tortures. The next day he decided to trephine M. de Bugueno, who had been struck by a fragment of stone on the head, and had laid insensible for fourteen days. He cured them both. His success, which the surgery of our period must pronounce extraordinary, appears to me as a strong testimony of the

* Introduction to the works of Ambrose Paré.

confidence with which Paré inspired the wounded, and which facilitates such cures."

The little brotherhood of Surgeons of St. Come, recently erected into a college, ready to seize on every circumstance which could redound to their advantage, desiring to possess in its community a man who enjoyed such great renown, and of such high standing at the Court, decided to admit him to an examination, in despite of the statute which required that the candidate should understand Latin; and besides, what was unheard of before, they awarded him the honor of a gratuitous reception. In the course of the year 1554, Ambrose Paré submitted to all the examinations, and obtained successively the grades of bachelor, licentiate, and master in surgery.

Notwithstanding the correctness and firmness of his character, of which he gave a thousand proofs, his favor at the Court never diminished. He was surgeon in ordinary to Henry II., and Francis II., first surgeon of Charles IX., and of Henry III., which caused the witty and true remark, that the kings of France transmitted him to their successors as a legacy of the crown. In the midst of the excitement of camps, and a very extended private practice, he found time to read all that had been published on his Art, and to compose a great number of works himself. He enriched nearly all the branches of surgery with some discovery or improvement; but instead of making a secret of his inventions, as was very much the custom at that time, he thought it his conscientious duty to give the public the benefit of them. "For my part," he says, in the preface of his large work on Surgery, "I have dispensed liberally to every body the gifts that God has conferred upon me, and I am none the worse for it, just as the light of the candle does not diminish, however many may come to light their torches by it."

The doctrine of A. Paré, on gun-shot wounds, was rapidly disseminated. From the year 1550 Bartholomew Maggi, a physician of Bologna, advocated it without naming its author, and sustained it by decisive experiments. He observed that none of the wounded by arquebuse shots felt any heat, and that their clothing did not present any trace of burning. He shot balls through packets of powder, without setting them on fire. John Lange made these views known in Germany. Leonard Botal, a celebrated physician of Turin, was also one of the first to take it up, but like those I have named, kept back the true author's name."*

I have dwelt somewhat at length on the theory and the treatment of gun-shot wounds, because this class of lesions, unknown to the ancients, had at that time acquired a major importance, to increase from day to

* Œuvres d' A. Paré.

day, as a result of the incessant employment of that species of weapon. I shall not enter into a detail of the additions and improvements that the other branches of surgery received at that epoch; these details will be more in place in the following period, when we shall give a retrospective glance at the history of each of the principal surgical operations.

### Obstetrics.

I have already said, but it may not be improper to repeat it, that obstetrics is a branch of surgery which, from its importance, merits to be examined separately; there, as before observed, the life of two individuals depends on a skillful maneuver, or on an indication clearly understood. The great surgeons of the sixteenth century felt this truth, and did not neglect the art of accouchement; but none of them occupied themselves with it in so special a manner as Jacob Guillemeau, pupil and friend of Ambrose Paré. We owe to him the first improvements that the moderns made in this art. I will cite, as one of the most capital, the formal precept, to terminate the accouchement artificially, in the case of considerable hemorrhage, or when the woman is taken with convulsions, during labor. Guillemeau supports the precept on the authority of Hippocrates, and what is much better, on a great number of facts which prove the value of the practice, and how great the danger of its neglect, when it is indicated.

The Cesarian operation was known to the ancient Greeks and Romans, but during the middle ages, like many others, it had been abandoned. Some of the surgeons of the sixteenth century attempted to re-establish it; among others Francis Rousset, physician to the duke of Savoy, who recommends it very warmly. He reports several cases, where it had a happy issue, both for the mother and the child. The most remarkable of all is that of a woman of Milly, who was delivered six times by this operation, and perished in her seventh confinement, because, according to Rousset, the surgeon who had been accustomed to operate upon her was absent. Unhappily, these facts are not well established.

## CHAPTER VIII.

### CLINICS.

Clinics, as has been said, is not a branch of medical science: it is the science in totality, taught or put in practice at the bedside; it is there that theory is put face to face with reality. In vain will we have stored our minds with the precepts of the greatest masters, in vain shall

we have heard for years together, the most learned professors, and graven their lectures in our memory: if we have not followed them to the bedside, if we have not seen them make a test of their methods upon the living, we shall know very imperfectly their doctrine. You may possess very extensive general or theoretical notions, but you will be ignorant of a crowd of details which language can not describe, and which sight alone can supply. You may be capable, perhaps, to discourse on the most difficult questions in science, and excite the applause and admiration of an auditory, but you may still be an ordinary or feeble practitioner. Let you be placed in the presence of a grave and complicated disease, and you are required to point out, from the midst of a crowd of symptoms, those which shall form the bases of a curative indication, and you will be embarrassed and troubled. When, in a perilous and urgent case, it is necessary to make a prompt decision, on which depends the life of the patient, you will have neither that correct judgment, that prompt appreciation of the case at a glance, nor that firmness of resolution necessary for the emergency; all this is acquired by practice, and it is clinical teaching alone that lays the foundation of this practice. By this, though the pupil does not practice himself, he at least sees practice, and mingles with it; he participates in the practice of the teachers, and acquires experience, without any danger to the patient. Clinical teaching is, in a word, the indispensable complement of all medical education.

In primitive times, when the science was only composed of a few notions, easy to seize and retain in the memory, and which were perpetuated by tradition, without the aid of books, there was no other mode of transmission in medicine than by clinical teaching. Then the lessons consisted more in example than precepts. The pupil attached himself to his master, in the character of an aid, servant, or adjunct. He became accustomed, under his directions, to discern diseases, and prepare and administer medicine. At a later period, when Medicine became the exclusive domain of some sacerdotal families, this mode of teaching was continued in the Asclepidian schools. The Hippocratic collection offers, under the title of Epidemics, admirable clinical narrations, for the time when they were written.

But after the foundation of the school at Alexandria, there is no further mention made in the history of Medicine, of instructions being given at the bed-side. Collections of clinical relations, traced after the model of the Epidemics of Hippocrates, became more and more rare, because less value was attached to direct observations. The professors loved better to descant on the nature of man, the essense of diseases, the elementary action of medicines, than patiently to observe the phenomena,

and describe them with simplicity, accordingly as they were presented to the senses.

The invasion of the philosophers into the domain of Medicine, was one of the principal causes of the abatement of clinical observations. These men, strangers to the practice of the Art, imagined themselves, and persuaded others, that it was not necessary, in the study of nature, to pause at the phenomena; but that the mind must penetrate beyond these sensible things, and seek the internal constitution of entities—their elementary and invariable principles, on which depended, they said, the forms and actions apparent to our senses. This was, if we may believe them, the unique means of placing science on a solid and immovable basis; while the phenomena, they added, offer only a shifting ground, on which nothing stable can be erected. The physicians, misled by these sophisms, attempted to go back, by the aid of some anatomical and physiological notions, to the principle of life; they hoped to unravel the mechanism of the most internal acts of the animal economy; and pretended to determine the primitive mode of formation of diseases, or their latent causes, and to direct the action of therapeutic agents against the primary affection. They substituted transcendental hypotheses for the simple results of observation, and believed that they had raised the edifice of Medicine on an immovable foundation, because they had established it on a basis inaccessible to the appreciation of the senses, and consequently, they said, secure from their illusions and instability.

By this doctrine, clinical observation lost much of its importance; it was no longer a torch which could illuminate every step in science, and supervise, constantly, its progress; it was only a feeble and uncertain light, which, after having enlightened the cradle of human reason, and served as a basis to the mind, on which to elevate itself to greater truths, could henceforth be useful only to direct the artist in the application of immutable rules which the mind had discovered.

In vain some sages, undeluded, from experience, by the fictions of theory, strove to recall the medical world to the study of phenomena, by proclaiming that our light on the nature of things does not go beyond the perception of the senses; in vain they affirmed that the only means of enlarging our knowledge consists in adding, unceasingly, new to anterior observations; their voice was not heard, for the human mind does not willingly accede to a slow pace, and the imagination loves better to anticipate the march of time. To the laborious, incessant and exhausting study of phenomena, they prefered a science fully made, having invariable dogmas, which were supposed to be founded on the essense of

things. Idleness and vanity found much more satisfaction in this last doctrine.

Nevertheless, the habit of observing and describing facts as they were developed, was not entirely lost. The coryphii of the Empirical sect always remained faithful to it; and tradition says that they had collected in the earliest years of the Alexandrian school, a considerable number of historical clinics, after which the later nosographers, Aretæus, Cœlius Aurelianus, and others drew the portraits of a number of diseases so well that but little has been added to them since.

After the death of Galen, during the lapse of time which we have named the Second Age of Medicine, and which extends from the eleventh to the fifteenth century, the princes of the science, in the midst of their habitual sterility have transmitted to us but a small number of interesting clinical facts, some of which have been pointed out. It should be remembered that we owe to the writers of that stationary epoch, among other acquirements, the knowledge of certain eruptive fevers, of which they have given the first description; but they are justly censurable for reporting none but extraordinary cases, and for having omitted, in the most of their clinical relations, important details.

Long after the revival of letters, clinical teaching, so useful to the progress of science, and so indispensable to young practitioners, was still in oblivion, and this fact led Ph. Pinel to make the following reflections, which may be thought too severe: "It seems," says the learned professor, "that the first editions of the ancient works of the Greek physicians, published at the commencement of the fifteenth century, should have led to the restoration of clinical studies as the sole guarantee of solid instruction, and of the ulterior progress of medical observation; but this happy impulse of the mind was still retarded for more than two centuries; they plunged into all the subtilties of an indigested erudition—that is to say, they were occupied solely with commentaries and disputes and controversies, as in the other physical sciences; and they left the sole method of settling all uncertainties, and repressing the wanderings of a deranged imagination, viz.: the historic description and progress of diseases in the hospitals."

I believe that in the above passage our celebrated nosologist did not fully appreciate the services rendered to science during the Erudite Period. In fact, these physicians had not the happy idea of founding clinical teaching, such as it now exists in a great number of hospitals; it is also true, that they occupied themselves more with philological researches than with the observation of nature; but what better could they have done in order to free the human mind from the rust which a

long course of years had heaped upon it, than restore the Greek science in its original purity? This was a painful and ungrateful, but necessary task, and which must precede the labors of reformation.

Nevertheless, they did not neglect entirely, as is affirmed above, the study of phenomena, and the historic description of diseases. They began, from the fifteenth century, to make relations of epidemics, on the model of those of Hippocrates; they observed a mass of new pathological states, and attempted means of cure unheard of by the ancients. In fine, in the course of the sixteenth century, the spirit of innovation made progress, and some physicians carried it even to the point of abuse, as we shall see in the next chapter. But among those who remained faithful to the worship of tradition, enriching, nevertheless, the science by valuable clinical observation, I will cite particularly, Nicholas Massa of Venice, John Crato of Craftheim, Rembert Dodoens, John Schenck, Felix Plater, Peter Forcest, or Forestus, Marcellus Donatus, Louis Duret, and finally William Baillou, worthy by his great character and his high intelligence and talent for observation, to be the precursor of the medical reform that commenced in the following century.

Nothing proves better how much the art of observation and description of pathological phenomena made progress at the epoch of the revival of letters, than the great number of new diseases of which the authors of that period make mention. We read in their writings for the first time, the names of whooping-cough, milliaria, scurvy, plica polonalis, syphilis and raphania. Is it credible that all these diseases, some of which modify the economy profoundly, fell upon Europe at the same time? Is it reasonable that the changes occurring in the political and commercial relations of the people—the discovery of the new world, giving rise to long voyages at sea—in a word, the modifications introduced in public and private hygiene, resulting from so many events which marked that epoch, could have suddenly given birth to this flood of new diseases? No one, I think, dare sustain it. It is more probable, I might almost say certain, that the most of these diseases had an ancient existence; but they were not recognized before, by attentive observers who could discern their true characters, and there were no exact historians to describe them.

Medical men in our days, are divided in opinion on the origin of only one of these affections—syphilis; some inclining to believe that it was developed spontaneously in Europe, toward the close of the fifteenth century; others think that it was imported from the new world; others, and the greater number, see in the venereal diseases only a degeneration, or one of the numerous ramifications of leprosy. We now proceed to

discuss each of these opinions, and will endeavor to make a choice of one of them:

I. The first view accords with the opinions of the most ancient historiographers of syphilis. Indeed, the most of the authors that have first made mention of this disease, have considered it as a sort of pest *(lues venerea)*, developed under the influence of a particular epidemic constitution. They agree in saying that it appeared nearly simultaneously in all parts of Europe—at Berlin, Halle, Brunswick, in Lombardy, Apulia, Auvergne, etc. They regard it as impossible that the contagion could be propagated in so short a time, and at such widely separated points, as the sole result of impure sexual commerce, consequently they are forced to admit the influence of an epidemic constitution.

But they differ very much among themselves on the causes that could have given rise to the development of such a constitution. Some, like Leonicenus, attributed it entirely to natural causes. He thought that it was the result of the extraordinary inundation that occurred in all parts of Italy toward the close of the fourteenth century—the sun having heated by his rays the soil soaked by the pools of stagnant water that covered the low ground, there resulted unhealthy exhalations, which gave rise, he said, to the variolus epidemic. He supported his views on the authority of Hippocrates and Galen. These authors say, indeed, that in damp seasons, when the south wind blows, or when no wind disturbs the air, there are developed a running from the eyes and ears, ulcerations of the mouth, pustules, and suppurations of the genital organs.

Others attributed the appearance of the pest to astrological influences, such as, for example, the meeting of Saturn in the sign of the Bull, or the union of Jupiter, Mars, Mercury, and the sun, in the sign of the Balance, etc. A large number rejected all these learned explanations, and saw in the propagation of this new plague only the finger of God, who laid it on men, to punish them, and turn them away from unbridled libertinism. Van Helmont regarded syphilis as the result of the connection of a man with a mare affected with farcin. Andrew Cesalpine, as the product of the mixture that the Spaniards had made of the blood of a leprous person with wine. Gabriel Fallopius thought the venereal vice was engendered by a poison which the perfidious Neapolitans had thrown into the wells whence the French drew their water. These reveries would not be worth mentioning, if they did not indicate admirably the spirit of the age, and show to what a degree of aberration a love of the marvelous may draw the most clear-sighted men.

II. Gonzalvo Ferdinand of Oviedo, Intendant-General of the commerce of the New World, under Charles V., and author of a History of the

East Indies, printed in 1545, was the first writer who said, positively, that syphilis originated in America. He says that Christopher Columbus having returned from his second expedition to the new hemisphere, in 1496, the sailors and soldiers of his suit enlisted, for the most part, under the flag of Gonsalvo de Cordova, to go and fight the French, who had invaded the kingdom of Naples. They communicated, he adds, to the French and Neapolitans the affection they had brought from St. Domingo, where, he asserts, the disease is endemic among the natives of the country. The statement of Oviedo was admitted almost without examination, by most of the physicians of the sixteenth and seventeenth centuries; but in the early part of the eighteenth, Astruc sustained it by very erudite researches, which gave it for a time the authority of a settled decision.

Unhappily for the veracity of the Spanish historian, it is certain, from authentic testimony, that the pox broke out in Naples toward the close of the year 1493, or in the beginning of the following year, that is, two years before the arrival of the Spanish fleet. We read, in a decree of the parliament of Paris, relative to venereals, as follows: "This day, the sixth of March, (1496 or 1497) because in this city of Paris there are several persons afflicted with a contageous disease, called big pox, which for *two years* has made great progress in this kingdom, as well in the city of Paris as in other places, etc." If there were needed other proofs to invalidate the narative of Oviedo, we might add, that he exhibits in many places a manifest prejudice against the inhabitants of the New World. He likens them to the Canaanites, and the Spaniards to the people of God, so as to give a color of justice to the atrocities which he inflicted upon the unhappy Indians during his government.

Other later writers have pretended that it was on the first return of Christopher Columbus, that his sailors and soldiers carried into Europe the syphilitic infection; but this assertion falls to the ground, like the preceding, before a serious examination. In fact, it is known, that on his return in his first voyage, this bold navigator was assailed by a tempest that forced him to put into Lisbon, where King John II. retained him seven days in the midst of continual festivals. Thence he made sail for Palos, where he landed in the course of the month of March, 1493. From this city he went by land to Barcelona, with eighty-two men of his equipage, and nine Indians. There he met King Ferdinand, with Isabella and the whole court. After remaining some weeks at Barcelona he started for Cadiz, to prepare for a second expedition. Now, at none of the points where he touched during his route, in none of the cities where he stopped with his retinue, did the slightest symptom of the venereal poison manifest itself for several years, while from the year,

even, of his arrival in Europe, or the year following, numerous attacks of a venereal nature were observed in many and very distant places in Italy, France, and Germany.

The authors of this epoch, who assumed that syphilis originated in America, insist very much on the following consideration, which they think of great value. The Supreme Intelligence, they say, is accustomed to place the antidote by the side of the poison; now, guaiacum wood, which may be considered as the most precious specific against venereal accidents, is indigenous to the West Indies, and it follows, therefore, that the affection it was destined to combat must have originated in the same regions. This argument has lost so much of its force in its progress down to us, that there is to-day no necessity for refuting it.

III. The opinion that syphilis is a degeneration of leprosy, or one of the numerous forms of this affection, seems not to be as old as the two preceding ones; but it has not ceased to make progress in the course of time, and now it reigns almost exclusively in the medical world. In order to appreciate to what extent this is probable, it is necessary to place in comparison the principal symptoms attributed formerly to the two diseases under consideration.

The writers who wrote first on the venereal disease say, that it commonly commenced with large pustules on the genital parts, invading subsequently the entire body, and hence obtained the vulgar name of big-pox. The pustules were not accompanied by fever, as are those in small-pox; they never came to perfect maturity, but were converted into pustules adhering to the skin, or phagedenic ulcers. Very soon pains were felt in the extremities, which increased by the heat of the bed. Then there supervened, after a period more or less long, a formidable cortege of consecutive developments: such as bubos, chancres in the mouth, nose, eyes, and vegetations or excrescences of every form, alopecia, macules, exostosis, necrosis, etc.

Blennorrhagia *(les écoulements)* now so common, and which constitutes often in itself the whole disease, was not observed till twenty years later as a symptom of the syphilitic infection. It was also remarked, that the greater part of the developments called consecutive or constitutional, might, in rare cases, show themselves from the commencement: that is, without having been preceded by any other symptom of the infection.

Some observers, struck with the rapidity with which this epidemic was propagated at its first appearance, believed that the contagion could be communicated by the breath, even, of the diseased. However, greater numbers were of the opinion that it required the immediate contact of the ulcerated parts, or of the running matter, and this view soon became

universal. Such are, in substance, the characters that were presented at the first appearance of the syphilitic disease.

Now, let us see some of those which the ancient writers attributed to lepra. We read in the sacred books of the Jews: "The man on whose skin or flesh a diversity of color shall appear, or a pustule or any bright spot which seems to be the sore of leprosy, shall be taken to the priest Aaron, or to some one of his sons," etc. "The man who suffers with that which should only happen in the marriage relation, shall be impure. And it shall be judged that he suffers this accident when there is a constant accumulation of an impure humor which adheres to his person. Every bed in which he sleeps, every place on which he sits shall be impure."*

Hippocrates, Aretæus, Galen, Celsus, and the Arabian physicians make mention of gonorrheas or issues, of the semen; they speak of pustules, ulcers, phlegmons, excrescences and crusts located on the genitals and neighboring structures. The Latin satirists, Horace, Juvenal, and others, describe some symptoms of this kind as being the fruit of a shameful lubricity.

The writers of the middle ages are more explicit than those of antiquity. William de Salicet, who lived in the thirteenth century, which is about two hundred years before the outbreak of the syphilitic epidemic, says bubos often occurred after an impure coition—*qùum accidet homini in virgâ corruptio, propter concubitum cum fœdâ muliere, aut ob aliam causam.* Lanfranc expresses himself more clearly still: "The ulcers of the penis," he says, "proceed either from hot pustules which burst, or acrid humors, or from commerce with a woman who has been previously affected in the same manner. If one wishes to preserve himself from all infection, it is necessary immediately after connection with a suspected person, to wash himself in a basin of water mingled with vinegar."† John Ardern makes mention of scalding urine, vulgarly called *chaude-pisses*, which was caused by ulceration of the canal, or by gonorrhea.

"It can not be dissimulated," says a modern writer of great weight on this subject, "that the resemblance is such in the different varieties of cutaneous diseases of the present time, when compared with those of remote times, that it is impossible in many cases to decide if an affection is venereal or not; the only thing that can be alleged against the identity is, that the ancients did not represent these diseases as contagious, if we except some tetters, corroding ulcers, and the leprosy.

* Leviticus, chap. XIII, verse 2; XV, 2, 3, 4—translation of Le Maistre de Sacy. See, also, in the Traité d'Hygiene of M. Levy, Paris, 1844, T. I, note to page 7.

† Liv. III. chap. II.

"Moreover, one disease can succeed another without presenting the same symptoms: it suffices if the last has some resemblance to the preceding, if it controls and displaces the other. Did not this occur at the end of the fifteenth century and at the commencement of the sixteenth? In those times leprosy and elephantiasis were frequent, and there were special hospitals for these diseases; but gradually these hospitals were deserted, and were employed for other purposes."*

The sudden appearance of syphilis in nearly all parts of Europe at the same time, which the first observers have reported as an extraordinary, and nearly miraculous thing, being persuaded that the disease was new—this species of sudden ubiquity for which they could not account, is explained very naturally, when the venereal affection is regarded as a degeneration or modification of leprosy, a disease extremely common at that epoch. We can conceive that from the moment physicians began to establish a line of demarkation between the symptoms of leprosy and those of syphilis, the first must diminish in proportion as the latter increased.

All the authors of the times signalize the marked similitude between the two diseases; they even say that one may be converted into the other. Analogous precautions were taken to prevent the extension of syphilis, as had been employed against leprosy. The regulations for the leprous hospitals served as a model for those of the lupanars, for in the commencement, the pox inspired a horror nearly equal to that of leprosy, and this horror did not diminish until increasingly efficacious means were found to cure it. Therefore the opinion which assumes that venereal diseases have always existed, is sustained by the greatest probabilities, and if it was not the first one embraced, it is to be accounted for in the fact that it flattered less the taste of an age passionately fond of the marvelous.

Sanchez, a Portugese physician, was one of the first to oppose the idea of the American origin of syphilis, and collected a number of passages which would authorize us to think that this affection commenced in Italy, as an epidemic, whence it rapidly spread throughout Europe.†

He submits the work of Astruc to a luminous and severe criticism, and refutes, triumphantly, his conclusions. But this effort was fruitless, and almost forgotten, when Hensler took it up nearly ten years later,

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*Cullerier, Dictionnaire des Sciences Médicales, on Syphilis.—Dictionnaire de Médicine et de Chirurgie Pratiques, art. Syphilis, T. XV, p. 176.—M. Lagneau holds the same opinion on this point.—See Dictionnaire de Médicine, in 21 vol., at the word Syphilis.

†Dissertation sur l'origin de la Maladie Vénérienne. Paris, 1752: Examen historique sur l'apparition de la Maladie vénérienne en Europe. Lisbonne, 1774.

and supported it by new researches, which attracted the attention of all Europe, and created doubts in many minds.*

M. Jourdan† having examined, scrupulously, all the opinions emitted up to that time, on the origin of these diseases, concludes with Hensler, that all the symptoms which it had been usual to connect with syphilis, have been known and described from the remotest antiquity, but they were not supposed to proceed from a common source, (an impure coition) and as being attached to the same cause, until after the close of the fifteenth century. This last opinion, we have said, is the most generally received at present, nevertheless, all the syphiligraphs are not united in this view, and we must cite among those who oppose it, M. Gibert, whose authority is of so much more weight, because he has made on this subject very erudite researches.‡

## CHAPTER IX.

### THEORIES AND SYMPTOMS.

The prevailing theory during this period, as we have already observed, was a mixture of Galenism and Arabism. Nothing else was taught in the university schools of Italy, France, Germany, England, and Spain. Men standing at the head either of science or teaching, employed all their sagacity to unite together the ancient doctrines—to put in agreement, Plato and Aristotle, Hippocrates and Galen, Rhazes and Avicenna. They can all be ranked in the class of the conciliators, with a few exceptions, of whom I shall speak in the next chapter. But among them, Fernel occupies the first place, and merits special notice on our part.

John Fernel, surnamed the modern Galen, was born at Clermont, in Beauvoisis. He exhibited, from an early age, an extraordinary aptitude, and application above his years. He had made himself a reputation in letters, philosophy, and mathematics, when he began the study of medicine. Received as doctor in 1530, says his biographer, G. Plancy, with the unanimous applause of all the faculty of Paris, yet he did not feel

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*Geschichte der Lustseuche die zu Ende des XV. Jahrhunderts in Europa ausbrach. Altona, 1783, 1794, 2 vol., 8vo.

†Traité complet de la Maladie vénérienne. Paris, 1826, 2 vol., 8vo.

‡See the commencement of his memoir on the Syphilides, inserted in the *Memoires de l'Académie de Medécine.* Paris, 1843, T. X., p. 503, et als., and his Remarques Historiques sur la Lépre, inserted in the *Revue Médicale*, in the July and August numbers, 1840.

that his precocious success dispensed with the future study of authors, as is the practice of so many laureates, inflated by their juvenile erudition. On the contrary, he commenced reading with new zeal the masters in the Art, stealing from the hours of sleep and repose, every moment he could, and when his friends, alarmed for his health, represented to him his excesses in study, and persuaded him to take repose, he was accustomed to reply:

*Longa quiescendi tempora fata dabunt:* Destiny reserves for us repose enough.

The king of France, Henry II., was desirous of attaching him to his person, in the quality of first physician; but the philosopher refused that honor, saying that it belonged, by right of succession, to Bourgeois, who had been physician to the late king, Francis I. But after the death of Bourgeois, he had no further excuse to make, and was constrained to accept the eminent post, the object of so much solicitation.

It was in the midst of a very extensive private practice, and the duties of his new charge, that he undertook to collect all the medical knowledge scattered in the Greek, Latin and Arab books, and to form from it a body of doctrines, all parts of which would be united together, as branches are to the same trunk. To this end, he collected in each author whatever he found most substantial, then making a judicious choice of the materials he had collected, he gave them a form appropriate to the taste of the age, and composed from the mass a work perfectly regular in its arrangements, and which was regarded by his cotemporaries as the most complete and just expression of medical science, as it was at that time understood. His work, written with a Ciceronean purity and elegance, offers an extremely able fusion of the most accredited ancient dogmas. We have already exhibited some parts of that doctrine, and there remains but little more for us to do, in order to obtain a complete idea of the work, and the relations of its parts.

Fernel emits, in the first place, his opinion on the source of our attainments, and on the best method to follow in the study and teaching of Medicine. He unites, on this subject, the doctrines of Plato and Aristotle, which appear to be irreconcilable: the first affirming that ideas come to us by recollection, the second that they originate in our minds as the effect of sensations. He attempts to show each of them correct, as follows:

"Before the mind," he says, "is united to the body, it enjoys its full liberty; it perceives distinctly the essence of things, and possesses an instinctive knowledge of their nature; but as long as it is retained in its material prison, the body, oblivion obscures its view, like a thick cloud, and plunges it into profound ignorance. Nevertheless, it still retains a

slight remembrance of its divinity; and this pleasant reminiscence of celestial things becomes a ray which inflames it with an insatiable desire to learn and to know. Hence that ardent zeal and constant application, with which it struggles to recover, by means of sensitive impressions, the mass of its knowledge. It commences, at first, with the observation of sensible objects; then it seizes, by its thought, those which are accessible to the intelligence only. This, then, is the process by which have been established, with the aid of the senses, the principles from which human sciences have been deduced, and carried to a very high degree of perfection."*

What an agreeable mixture of truth and fiction, which the progress of light dissipated, as we shall see in the commencement of the following period. The philosophical theory, whose essential and fundamental dogma we have just read, was eminently appropriate, to kindle in young hearts a love for study, and to console the learned for the fatigues and privations that it imposed.

"The philosophers," continues the same author, "desirous to rest their doctrines on a lucid chain of rigorous proofs, have employed analysis. Such was the method adopted by Euclid, in the exposition of geometry and arithmetic; of Ptolemy in astronomy; such, also, the one which Aristotle adopted, in order to transmit to posterity his philosophy, and lay the solid foundations of so many truths, incomprehensible to the vulgar, and which produce astonishment like prodigies or fables."

What would the metaphysician Condillac have said, if this passage had been shown him; he who believed analysis a scientific method of modern invention? We have already seen, that this writer was deceived in regard to Aristotle—the effect of not having read, or badly comprehended him. We shall see, further on, that the description he gives of the analytic method, is imperfect, according to Barthez, one of the most competent judges of our epoch.

Fernel adds, in another book, "Seeing that the knowledge of those individual objects is not science, for the purpose of following a sure and rational method, I shall commence by general considerations."† This method, we see, is in perfect conformity to the doctrine of Aristotle, which we have already set forth, and the artificial sophistry of which we have unraveled. Here is the judgment that a sage of our century gives upon it: "how happy we would be, said Laromiguiere, if these general propositions, whose extent of application seems unlimited, and which have been placed with so much confidence at the portals of science, were as valuable as they are confidently announced to be. It would

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*Physiol. lib. I, cap. I. †Pathol., lib. I, cap. I.

then suffice to understand well a few axioms, to be able to comprehend, thoroughly, all that it is possible to know. But, I ask if it is for those who already possess the sciences, or for those who are ignorant of them, that they are embraced in a few hasty formula? Certainly these are not for the ignorant; who will dare maintain this? Now, if they are only the abridged expression of acquired ideas, they are only results, and not principles."*

Our philosopher concludes, from these reflections, that the general propositions, and the axioms, which it had been customary to place at the commencement of most treatises, would have been more properly placed at their end. But that was not the gravest inconvenience of this bad method; it has another, much more capital, which we have already pointed out, but to which it is important to recur. This consists in what the axioms of physics and of medicine of the ancients proclaimed. These pretended principles, on which they were willing to rest the edifice of our acquirements, instead of being the result of repeated observations, are the fruits of preconceived opinions, and of hastily formed judgments on things imperceptible to the senses. It is on this account, that when we come to compare their principles with particular facts, or reality, we often find the former in opposition to the latter. Whence it follows, that their principles would be defective or insufficient guides in practice, which has been proven by the ancients themselves. Fernel was compelled to avow it, notwithstanding his prejudice in favor of principles, that "no one could accomplish any thing great by the simple knowledge of generalities, without the habit of studying particular cases."† An old adage establishes, in a very explicit manner, the antagonism of this philosophic method, to observation, for it says, positively, "*good theorist, bad practitioner.*" Here, unquestionably, is a formal condemnation of the theoretic principles of antiquity!

Fernel divides medical science into three great sections, namely, physiology, which comprehends the anatomical description of the parts, pathology, and therapeutics. Each of these divisions contains seven books:—

1. In the first section we find again the doctrine of Galen on the elements, humors, temperaments, innate heat, radical moisture; on the formation of natural, vital, and animal spirits; in a word, on all the functions of the animal economy, as they were understood by the physician of Pergamos. In it is given the explanation of the most impenetrable mysteries of the organism, in conformity with the ideas of the age, and with a firm conviction of their truth. Would you know on what

* Leçons de Philosophie, 1826. First part, § 5. † Pathol. lib. IV., Præfatio.

depends the sex of infants? Fernel replies, in the faith of the ancients, that it depends on the quality of the semen of the father and the mother. If heat and dryness, he says, predominate in the two liquids, a male will be generated; if coldness and moisture predominate, it will be a female. Ask whence proceeds the resemblance and want of resemblance between the parents and their offspring? Our physiologist answers you that it appertains chiefly to the imagination of the mother.

2. The second section, that is, the treatise on pathology, offers us, in the first place, abstract dissertations on the essence, the causes, and symptoms of diseases. We shall not recur to this point, which has heretofore been alluded to. Afterwards the author exposes the specific and individual differences that distinguish morbid affections from each other, and on this subject he proposes a programme very difficult to fill up. "As for myself," he says, "I shall never believe I have profound knowledge of any affection if I do not know positively, just as if I could see with my eyes, in what part of the human body is its primitive seat, what species of organic lesion constitutes it, whence it proceeds, if it exists idiopathically or by sympathy, or if it is kept up by the presence of some exterior cause. He who pretends to be a rational physician must sound each of these subjects, and discern them by certain signs."*

Where is the pathologist who would now dare to promise himself the solution of such a problem, in most diseases? Fernel regarded it solved for a long time, and aspired only to the glory of thoroughly comprehending the sense of the solution which had been given by the founders of the doctrine, and faithfully reporting it. Here are some propositions from his pathology, which might be said to be extracted from the writings of Galen:

"Fever is an unnatural heat, which is propagated from the heart into all parts of the body. The febrile essence exists in the heart, and being opposed to the innate heat, falls furiously upon the organ, like an enemy changing and troubling all its functions.†

"Ephemeral fever resides especially in the vital spirit, of which the heart is the great reservoir. Now, this spirit being extremely subtile, it results from that that this fever is the most transient of all.

"Synocha, or continued fever, is seated in the humors of the heart and great veins.

"Hectic is fixed in the substance itself of the heart."

These propositions, which now appear so strange to us, passed for fixed truths in the days of Fernel. Skepticism was at that epoch as rare in philosophy and medicine as in religion. They believed as much in the

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* Pathol., lib. v. † Ibid.

infallibility of Aristotle, Hippocrates, Galen, and Avicenna, as in that of St. Paul or St. Augustine. When an axiom in philosophy or an aphorism in medicine had obtained the assent of the great geniuses of antiquity, faith was given to them, without examination, as to a dogma of theology consecrated by the sanction of a Council. This shows us how so many errors were taught and defended with entire conviction, by men of lofty intelligence.

3. In regard to therapeutics, I have exposed sufficiently at length the principles on which it was founded, and the manner of their application. I shall content myself by adding here some examples of cure, which cannot be explained either by the rule of contraries or similars, and which completes the refutation already given of these two rules, and proves more and more the necessity of banishing them from therapeutical language.

*First example.*—A man having swallowed, by mistake or design, a concentrated solution of corrosive sublimate, the physician called at the moment hastens to obtain the whites of eggs, and gives them to the patient to drink. How could a chemist explain the anti-venomous action of the remedy? Shall he say that the force of the albumen, being opposed to that of the poison, formed an equilibrium and neutralized it? No. He will say that the mercurial is decomposed by the albumen and brought into a state of protochloride, a substance insoluble and much less deleterious than the sublimate. There is not, as we see in this explanation, any idea of antagonism or similitude between the poison and the antidote.

*Second example.*—A young woman is afflicted with chlorosis; her blood contains less fibrin and less red globules than in the normal state; the menstruation is effected imperfectly or not at all. Feruginous preparations are ordered, and exercise on horseback, with a nutrition composed mostly of meats. At the end of some months, on this regimen, the patient recovers her health. What relation of similitude or opposition is there between the pathological state of this person and the treatment employed? It would need very keen eyes to perceive between these things, so separate, any analogy or antagonism. All that can be said is, that the diseased organs have been put in contact with new modifiers, by the aid of which they have returned to their normal state.

*Third example.*—A traveler, overcome by cold, is carried into an inn. He is very cautiously kept from the fire, and is rubbed with snow. In this case the remedy has much similitude with the morbific cause. The examples of this order are rare, yet they have sufficed to suggest the strange system of Homœopathy—so much is the spirit of man inclined to generalize even the most exceptionable facts.

*Fourth example.*—Let an individual suffer a luxation of the femur, by any accident whatever. To restore the bone to its natural position, the surgeon must act in a contrary sense to that of the forces which produced the displacement. In this maneuver there is a manifest opposition between the morbid cause and the remedial process.

These examples suffice to demonstrate materially, that neither the law of contraries nor the law of similars can be rationally elevated into a general therapeutic axiom. If it be desirable to establish an axiom which embraces every case of curing, we must seek it in another class of ideas, as we have already insinuated on more than one occasion, and which we shall formally demonstrate in the next period.

## CHAPTER X.

### OCCULT SCIENCES.

The doctrine which we have developed in the last chapters reigned almost universally in the medical world, during the fifteenth and the sixteenth centuries. Nothing else was taught in the schools, so that it may be regarded as the orthodox doctrine of those times. Nevertheless, a few voices protested against it, and attempted to overturn the ancient edifice of Philosophy and Medicine. But these voices had only a passing echo; they could not arouse the mass of minds, because they proposed nothing, in the place of a doctrine which had the sanction of ages and genius, but informal essays and undigested lucubrations. The most of the partisans of the occult sciences were restless minds, such as are found in all ages, who bear impatiently the yoke of authority, and who, full of confidence in their own abilities, will receive a law from no other person. Some of these did not lack sagacity, imagination, or audacity; but most of them lacked connection of ideas, propriety of language, and dignity of conduct. Prophets or demons, they had among themselves no community of principles—living most of the time isolated from each other and the rest of the world. They became remarkable by their oddities, their adventures, and even their misfortunes. Instead of setting up again the car of reason, the sectators of the occult sciences who gave the first signal of revolt against the accredited doctrines, would have caused the world to deviate still more, if it had followed their foolish direction. Nevertheless, we meet in their writings some useful truths, mingled with a mass of reveries. They have founded no

doctrine worthy of a philosophic regard; but, by their declamation, they forced the true savans to leave the track of the past, and revise the elements of our knowledge, which led to the dawn, in the following period, of an admirable scientific reform.*

I. The first promoter of the occult sciences who is mentioned in the history of Medicine, is Cornelius Agrippa. Issue of a noble family of Cologne, he received a distinguished education, and possessed varied and extensive attainments; but his natural inconstancy and caustic humor raised up enemies every where against him, and prevented him from becoming permanent in any locality. He led a wandering life, sometimes honored with the favor of the great, and again plunged into extreme misery. Entering early into the service of the Emperor Maximilian I., he obtained at first the post of secretary, and followed that monarch in the army, where he distinguished himself by his bravery on several occasions, and merited the title of knight. Disgusted very soon with the profession of arms, he quit it to devote himself to the study of jurisprudence and medicine, between which he divided his time. His intemperate and bold pen soon drew him into quarrels and persecutions. At Dole, he fell out with the monks; at Paris and Turin, he compromitted himself with the theologians; at Metz, he drew upon himself the formidable animosity of the Jacobins, for having attacked, imprudently, the prevailing opinion at that time, which gave three husbands to Saint Ann. His oddities and incessant controversies obliged him to fly from country to country. He was a vagabond, and almost a mendicant, in Germany, England, and Switzerland. Thence he went to Lyons, where at that time resided Louisa de Savoy, mother of Francis I., and regent of the kingdom, who honored him with the title of her physician. But Agrippa found these functions beneath his merits and birth, and he did not fulfill them long. Having dared to predict to the superstitious princess the reverses which he believed announced by the course of the stars, he was disgraced and banished from the court of France. From thence his evil star led him to the Low Countries, where he was cast into prison on account of his treatise on the *Vanity of the Sciences*, and on *Occult Philosophy*. Afterward he dared return to Lyons, and was there incarcerated anew for a libel which he had published against his old protectrice, Louisa de Savoy. Finally, his adventurous life was terminated in a hospital of Grenoble, in 1535, at the age of nearly fifty years.

Among the works proceeding from his satiric pen, the most considerable, the one in which the bitterness of his spirit, and the caustic

* Eusèbe Salverte, Des Sciences Occultes, or Essai sur la Magie, les Prodiges et les Miracles, Paris, 1843.

character of his genius is most liberally displayed, is his treatise on the *Uncertainty and Vanity of the Sciences*, in which he proposes to demonstrate, "that there is nothing more pernicious and injurious to common life, and nothing more pestilential to the salvation of souls, than the arts and sciences"—a paradox renewed and sustained with much more eloquence in the last century, by J. J. Rousseau. Agrippa approached his subject in a manner more extended than the philosopher of Geneva. He commenced, according to the custom of the times, by establishing his proposition on scriptural authority; then he supported it by testimony drawn from profane authors. Afterward, he passed in review the various departments of human knowledge, the diverse occupations and professions, and concludes from this detailed examination, that each of them does man more harm than good. Courtiers, warriors, magistrates, churchmen, proletarians, all, are cited to his tribunal, where they are judged and condemned. He only acknowledges the value of laborers and shepherds, who, he says, have produced the necessaries of life, since the fall of Adam.

He speaks as follows of alchymy, which he had practiced a good deal: "In fine, having lost the time and the money which you have devoted to it, you will find yourself old, ragged, hated, famished, always smelling the sulphur, soiled with sweat and charcoal, paralytic by frequent manipulation of quicksilver, and gaining nothing but a running nose; in a word, so unhappy, that you will be willing to sell your body, and even your soul.*

As to lawyers and physicians, we may judge how he treated them, by the following facetiousness: "Some jurisconsuls and physicians were disputing once for preeminence: the suit was heard by a magistrate, who examined both parties, and noted their answers. 'What is the custom,' asked the judge, 'when criminals are led to punishment; in what order do the hangman and the thief march to the scaffold?' They having answered, that the thief went first, and the executioner followed; the judge founded upon this report, his sentence: Let the lawyers, then, proceed, and the physicians follow next; showing in this way, his views of the grand larcenies of the former, and the bold homicides of the latter."†

He did not show himself more gallant towards the fair sex. "The court women," he says, "have also their particular vices. We see some of them handsome in person, gracious, agreeable, genteel, and besides well

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* Paradoxe, or the Uncertainty, Vanity, and Abuse of the Sciences, by Agrippa. French translation, 1608, chap. xc.

† Ibid., c. 83.

dressed, ornamented, and enriched with gold rings and precious stones. But it is not easy for every one to penetrate with the eye, under those fine veils, which cover often hideous monsters. On this account, Lucian has justly compared them to Egyptian temples, which are beautiful and rich externally, constructed of elegant stones, and adorned with sumptuous works; but if the gods were asked what was within, to which these superb edifices were dedicated and consecrated, they would answer a stork, a monkey, a stag, a cat, or some other ridiculous animal."

We will terminate the extracts from this martyrologist, by the following passage, relative to monastic sects. "They are joined," says our sarcastic writer, "like all free receptacles for wanton sinners, by all those who, affrighted by their evil consequence, fear the rigor of the laws, and who can find no other safe retreat; and by those who have led infamous and dishonest lives, and are reduced to want and beggary, after having wantonly dissipated their goods in brothels and taverns, and become hopelessly in debt to all of them. Behold the great sea in which live, with other fish, Behemoth and Leviathan, enormous monsters and strange reptiles, whose number is infinite."*

Let us now look at the morality of the work, and we shall find it, I think, worthy of an adept of the occult philosophy. "If you desire to obtain wisdom from the tree of life, and not that from the tree of knowledge of good and evil, reject all human doctrines, all the curiosities and discourses on the flesh and the blood, re-enter into yourselves, and there you will learn every thing; but if you cannot perceive them by clear and manifest intelligence, as well as the saints, it is necessary to have recourse to Moses, to the prophets, to Solomon, to the evangelists, to the apostles—for all the secrets of God and nature, the reason and basis of all laws and customs—the knowledge of all things present, past and future, are contained in the holy writings of the Bible."

The definite conclusion that Agrippa drew from this book was not as strange to the eyes of his cotemporaries as it appears to us now. Long before him, erudite men of the first order, such as Bessarion, Pic de la Mirandole, Angel Politien, Marcellus Ficin, had attempted to introduce the ideas of Plato into physics. They thought, with that philosopher, the best means of acquiring science and mastering the truth, consisted in mental reflection and in isolation as much as possible from all external sensation; besides, they admitted a correspondence, sympathetic and antipathetic, between the celestial bodies and the beings of our sublunary

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* Paradoxe, or the Uncertainty, Vanity, and Abuse of the Sciences, by Agrippa. French translation, 1608, chap. CIII.

globe. They were persuaded that a great number of phenomena and events in this world have their origin in astral influences.

From this system to the extravagances of the Cabal there is but one step, and which was easy to take in times of superstitious prejudice and religious excitement. The ascetic Christians have, in fact, a belief that approaches very much the system of the Platoneans. They attribute a great number of events and phenomena, not to the influence of the stars, but to the direct intervention of the Divinity or the demon. According to them, also, the surest way to acquire science and wisdom consists in uniting the soul to God by meditation, prayer, and the renunciation of all exterior distractions.

The following is a summary of the Cabalistic theory:—All the events of life and all the phenomena of nature proceed from the immediate influence which God, or demons, or the stars exercised on the archetype, that is to say, on the essential spirit of substances. He who is able to withdraw this spirit, and knows how to ally it to other bodies, possesses the faculty of creating new beings; he can fabricate gold at pleasure. The day and the hour of our birthplaces are under the domination of a particular star. Besides, each one of our principal members corresponds to some planet and shares its constitution.

Such is the foundation of the occult philosophy which is divided into four branches, namely, theurgy or theosophy, to which a man raises himself by prayer, meditation, and extasy, and which gives the faculty of producing, like the saints, supernatural phenomena by the intervention of God; magic, or the art of controlling demons, and imitating by their intermediation true miracles; astrology, or the art of reading future events in the stars, and predicting the fate of nations, the destiny of men, and the issue of diseases; lastly, alchymy, which teaches the secret of extracting the quintessence or the archetype of substances, otherwise called the philosopher's stone, by means of which the metals can be transmuted, gold fabricated, and many diseases cured.

Thus the errors of science, superstitious prejudices, religious excitement, and the thirst for riches, concurred at the same time to propagate the follies of the Cabal at the close of the middle ages. Never were there seen so many sorcerers, demoniacs, astrologers, and alchymists. Never were prophecies, visions, and prodigies of all sorts, so common. Not one remarkable event occurred, but immediately it was pretended that it had been announced by some previous sign or token. How many times was the end of the world predicted as very close at hand, putting in great agitation entire communities—not only the inmates of cottages, but even of palaces.

But in no country were the Cabalistic reveries as universally adopted as in Germany, where mysticism maintained them longer than elsewhere. Luther himself seemed to share the vulgar prejudices of superstition, and contributed much to spread them. He spoke often of struggles with the devil. He said that the evil spirit was accustomed to appear unto him in the figure of a monk, opposing him with captious syllogisms. He blames the physicians for attributing to natural causes many diseases of which the demon alone was the author.

The history of this period offers us everywhere the spectacle of the reign of darkness struggling, with forces nearly equal, and with balanced successes, against the reign of light and of truth.

II. The second propagator of cabalistic Medicine was Jerome Cardan, who was born at Pavia, the first year of the sixteenth century. His life, like that of Agrippa, was full of vicissitudes, his character full of oddities. His mother attempted, vainly, during his uterine life, to produce abortion, by the use of certain drinks. After his birth she took an affection for him, and devoted to him all the care that his delicate health required. But his father never loved him; he treated him like a beast during his childhood, imposing upon him painful labor, above his strength. However, at the solicitation of his mother, he consented, rather late, to send him to a gymnasium, where the young Cardan learned the first elements of the Latin language, grammar, and dialectics. Afterward he embraced with very great ardor the study of mathematics, philosophy and medicine. He made such rapid progress that at twenty-two years he was capable to discuss publicly, all questions. Two years after he received the doctor's hat. He practiced medicine in various places till the age of thirty-three years, when he was named professor of mathematics at Milan. He kept this place only two years, after which he traveled in Germany, France, and England, and returned to Italy. He was imprisoned six months at Bologna, for debt, and went at last to Rome, where he obtained a pension from the Pope, and where he died, in the year 1576.

The following is the opinion of M. Dezeimeris respecting him: "His immense acquirements, extraordinary sagacity, great liberty in thought, his style, in general manly and elevated, would have placed him at the head of the most celebrated writers of the sixteenth century, if he had not united to so many qualities a taste for paradoxes and the marvelous—an infantile credulity and superstition hardly conceivable, an insupportable vanity, and endless boasting."* Leibnitz, a good critic in regard to talents and merit, judges him still more advantageously; he

* Dictionaire Hist. Med., at the word Cardan.

says, "Notwithstanding his faults, Cardan was a great man, and without his defects would have been incomparable."

He wrote a great number of works on philosophy, mathematics, and Medicine.* Sometimes he admits without any criticism the most absurd stories, visions, dreams, sorceries of all sorts, and explains them by the theories of the Cabal. Again, he affirms that he had never devoted himself to the cabalistic art; he blames those who practiced them, and jeers at those who have faith in them; he ridicules those persons who believe in apparitions, charms, and prodigies.

The following principles on Chiromancy are extracted from one of his works: "The indications of strength, of valor, and voluptuousness, are revealed by the thumb, which is under the influence of Mars; those of honorable positions, civil or ecclesiastical dignities, are located in the forefinger, which is controlled by Jupiter. The middle finger, which is under Saturn, indicates capacity for the Magical art; it also indicates melancholy, poverty, care, quartan fevers, and captivity. The ring finger submits to the reign of the sun, and presages friendship, honor, and power. The little finger, which is influenced by Venus, designates children, handsome women, and sensual pleasures. Mercury reigns over the triangle on the middle of the hand, where are found indications of erudition, cunning, robbery, etc." †

The history he has written of his life is no less curious than his works, and no less strange from the freedom, somewhat cynical, with which he confesses his errors and even his vices. It is true that he attributes his faults, as well as all the misfortunes of his life, to the influence of the stars. Moreover, he loves to speak of himself so much, that he omits no particular; he gives the size of his inkstand, the cost of his knife, the color of his hair at birth, the age at which he lost his teeth, and other trifling minutiæ. Nevertheless, neither the great number of his writings nor the versatility of his humor, would suffice to explain his tediousness, his numerous repetitions, and frequent contradictions, if we did not know that he composed most of his works under the pressure of want; that in his haste to finish them, he often let his pen run at hazard, without any other desire than to increase his volume so as to obtain a better price.

III. Paracelsus, native of Marien-Einsiedeln, a village of Switzerland, twenty miles from Zuerich, had no cause, like the preceding two, to complain of his lot, or of men. He made more noise in the world while he lived than many savans of superior merit, and after his death he obtained a celebrity which his writings are far from justifying. His

* Hier. Cardani Opera, Cura Car. Sponii. Lugduni, 1663. Ten vol. in fol.

† Cardan, De Rerum Varietate, lib. XV., cap. LXXIX.

father, who was a physician, gave him his preliminary education. Afterward, he made him travel, according to the custom of the scholastics of those times, to visit the universities and hear the most celebrated professors. But instead of frequenting the schools, young Paracelsus sought the conversation of clever women, barbers, renovators, magicians, alchymists, in whose society he boasted he had obtained valuable secrets. A very marked taste led him at once to the chimeras of the Cabal. He declares that he did not open a book for ten years. He neglected to such an extent his academical studies, that he forgot the little grammar and literature he had acquired in the paternal mansion, and became incapable of expressing himself in Latin in an intelligible manner.

From the age of twenty-five years, he contracted the degrading habit of strong drink, and the passion augmenting from day to day, ended by absorbing entirely his reason and virility. It is certain that he never exhibited any inclination for women, whom he continually slandered. In regard to the feebleness of his intellectual faculties, hear what his secretary and faithful disciple, Oporin, says: "During the two years which I passed with him, he was so strongly inclined to drunkenness and constant debauch, that he could scarcely be seen an hour or two in the day without being full of wine, especially after his departure from Basle for Alsace, where that condition did not prevent him being admired by every one as a second Esculapius. Nevertheless, drunk as he was, he did not leave off dictating to me something of his philosophy, when we had returned to our lodgings. Very often he would get up in the middle of the night and take his sabre, which he boasted had been given to him by an executioner, and whirl it around, striking great blows upon the walls and the floor, so that I would tremble, expecting every moment that he would split my head open."*

At that time, Paracelsus was between thirty-three and thirty-five years of age, which was the most brilliant period of his life. His writings, in which he gives with great emphasis, accounts of his numerous successful cures, after the fashion of charlatans, and in which he says he is possessed of infallible secrets against the most incurable diseases, had at last drawn on him public notice. He had just been called to Basle to fill the chair of Physic and Surgery. A crowd of curious and idle persons, and of enthusiasts attended his first lectures, which he delivered, not as was customary, in the Latin, but in the vulgar tongue. The thaumaturgist, in order to astonish his auditors, commenced by burning

* Oporini de vitâ et moribus Paracelsi, ad Solenandrum et Wierum epistola, Sennerti libro de consensu et dissensu chimicorum cum Gal. et Arist. inserta.

the works of Galen and Avicenna; then he began to read and develope his own writings, breaking off from time to time in declamations of this kind: "Know, ye doctors, that my hat knows more than you—that my beard has more experience than your academies. Greeks, Latins, Arabs French, Italians, Jews, Christians, and Mohammedans, you must follow me; I shall not follow you, for I am your monarch, and sovereignty belongs to me!" *

His vogue as professor was not of long duration; before two years had expired, no one was willing to listen to him. He was not less underrated as a practitioner; so that being obliged to quit Basle, in consequence of some mishaps, his precipitate departure created no sensation. He resumed then the wandering life which he always loved, and continued in it till the end of his days. We find him in Alsace in 1528, at Nuremberg in 1529, at St. Galle in 1531, at Mindelheim in 1540, and the year after at Saltzburg, where he died at the age of forty-eight, in the hospital of St. Stephen.

There are few medical men of whom so much of good and evil has been said, as Paracelsus, and there are few of whom it would be as difficult to form a proper and equitable opinion. If we consult the testimony of his cotemporaries, we find little agreement among them—they are often in direct opposition; and if we essay to enlighten ourselves by the writings even of the author himself, we fall into a chaos still more inextricable. Those who have attempted to analyse his doctrines, have abandoned the attempt, after efforts more or less obstinate and superfluous. "It would be an impossible enterprise," says a modern historian, "to arrange the writings of Paracelsus into a systematic form. Ideas without connection, observations which contradict each other, and incoherent phrases, defy the comprehension of the best reader. Fancy a man who in certain moments gives proof of an admirable penetration, and who, in the next, writes the veriest nonsense in the world; a man who is sometimes devoted to science, proclaiming the absolute authority of experience—launching the most violent anathemas against the theories of the ancients—and who again, as if deranged, seems to converse with demons, and to believe in their omnipotence; a man, in fine, who, fasting in the morning and drunk at night, yet put down all his ideas in exactly the order they were presented to his mind. Such was Paracelsus, whose name entire, was Aurelius Phillippus Theophrastus Parcelsus Bombastus ab Hohenheim.

"No one can contest the influence that Paracelsus exerted upon his age. That influence was certainly immense. Why? How? Was it

* Preface to the book entitled Paraganum, et alibi.

because he allied medicine and chemistry with the mystical doctrines of the Cabal? Others, wiser than he, had already done this. All the Hermetic philosophers had done it. Was it because, as some think, he was the representative of the alchymists? It is in the middle ages, and not in the sixteenth century, that we must seek such a representative; for from the epoch of Paracelsus, alchymy began to be exposed, and true chemistry to be developed. He should, then, have exercised a retrograde, instead of the progressive movement which he brought about. Besides, the true alchymists of the sixteenth century did not recognise, in any manner, Paracelsus for their patron; they do not even allude to him, no more than if he had not even existed.

"Let us endeavor to solve this question, which will enable us to comprehend all the influences that this man exerted on his age; and in the first place let us establish, once and for all, that it is to physicians, and not to alchymists, that Paracelsus addresses himself, and with whom he has controversies. As to alchymy, his writings embrace nothing which has not been said, and a thousand times repeated, by the theosophs of Alexandria, by the Arabians, Albert the great, Roger Bacon, Raymond Sulle, etc." *

Behold Paracelsus thus disowned by the chemists and alchymists, with whom, however, he was supposed to be connected, whose works he boasted that he possessed, and whose teachings he had followed; whose doctrines he was incessantly praising, for he disdained the science of Hippocrates, Galen, the Arabs, and the Arabists. He despised the course of instruction given in the universities, but highly valued what was drawn from the writings and experiments of the alchymists. He cites, with ostentation, the names of the latter, whom he had the honor to know, and whose experiments and writings he had followed. "I have diligently studied," he says, "under excellent masters, who were profoundly versed in that most abstruse and secret philosophy which they called *adept philosophy*. Now, my masters were, first, William Hohenheim, my father, who instructed me diligently, and several others, who were faithful in their teachings and concealed nothing from me. Additionally, I have studied the writings of several distinguished personages, the reading of which has been of great profit to me: namely, those of Scheit, bishop of Settgach, Erard Levantal, of the bishop Nicholas of Yppon, of Matthew Schacht, the suffragan of Phreisingen, of the abbot Spanheim, and those of several other great chemists. I have also become enriched with numerous and varied experiences, which I learned from the chemists, among whom I will name the very

* F. Hœfer, Hist. de la Chimie. Paris, 1843; T. II., epoch 3, sect. I., § 3, p. 9.

noble Sigismund de Fuger de Schwats, who has added very much to chemistry, and greatly extended it, having maintained at great expense several servants, whom he kept continually at work."*

Since Paracelsus must be erased from the number of men who have contributed to the progress of chemistry, though he boasts on all occasions to have improved it, let us see what was his influence on Medicine. Let us take the best, or rather the least exceptionable of his works, the one in which we meet the most sensible things and the least extravagance—his "GREAT SURGERY." M. Malgaigne, desirous of extracting the quintescence of this work, to use a common expression of Paracelsus, quotes, as an admirable extract, the following passage—the sole one, moreover, in which he has found any traces of a rational philosophy: "There are two kinds of ways and paths, or two methods and fashions, by which to arrive at a knowledge of the arts. The one teaches and conducts to the truth; the other, to illusions. The erring and vagabond discourses on the understanding and reason, are the causes of error, which occurs when they are permitted to guide us. Experience, and that which is found familiar and in accordance with nature, and which produces like actions, is the cause of truth and certainty."†

The entire chapter to which this fragment belongs, is devoted to show that arts in general, and Medicine in particular, are formed and improved by experience, and not by reason; for nature can and wishes to be known by the aid of the senses only, without needing to have recourse to ratiocination; thus, we do not know, by reason, what is concealed within the bowels of the mountain—but by the senses, only, which are impressed with the things that are seen, and reveal to our minds their nature.‡ M. Malgaigne is so astonished with the doctrine professed in this chapter, that he does not hesitate to proclaim Paracelsus the precursor of Francis Bacon, the great reformer of philosophy and the physical sciences—as if this was the first time that such a doctrine was put forth; as if Aristotle himself had not taught that all our ideas come from the senses, and that the sciences are the result of observation and memory! Even Fernel, so reverential toward the ancients, teaches also, that our first ideas arise from sensations.

Yet this doctrine has not prevented Aristotle, nor Fernel, nor Paracelsus, nor Bacon, nor a crowd of others, from departing in their theories from the testimony of the senses, to follow the phantom of their

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* Grande Chirurgie, translated into French by Dariot, liv. III, part I, chap. I.

† Ibid, liv. II, tr. II, chap. I.—Introduction aux Œuvres d'A. Paré, part II, § V, pa. 225.

‡ Ibid.

imagination. Who, more than Paracelsus, has falsified experience? Open his works wherever you may, and you will not find one chapter, not one page, which is in accordance with it. "He proscribes," says M. Malgaigne, (who endeavors, however, to sustain him), "he banishes from Medicine the doctrine of four humors, upon which, after Galen, all explanations had been founded; but he replaces one hypothesis only by another, and all his theory, resting on a doubtful basis, crumbles in its turn when it is submitted to the test which this supreme judge himself has invoked—experience. The following is the sum total of it:

"The human body, like the great world of which it is an image, is composed of four elements—fire, air, earth, and water. The fire, in man, is the soul; the earth is represented by the dry parts; the water, by the liquids; the air, by that which we now-a-days call gas, and which he terms vacuum: now these four elements may cause diseases. But, if we leave this high analysis, to get at the more immediate elements, the body of man is composed of mercury or liquor, of sulphur, and of salt. And now, see how this is demonstrated by alchymy: there are, in the first place, in the body, liquids; these are the mercury; then the solids which may be burnt, and the portion which burns is sulphur, while the residue, or the ash, is salt. But this doctrine does not belong to Paracelsus; it is found before, in the writings of Basile Valentin, and even, it is said, in those of another alchymist, anterior to Paracelsus, Isaac Hollandus."*

The above is what may be collected, most rational, on physiology, in the writings of this pretended reformer. As to anatomy, he says not a word about it, and for good reasons, because he was, on this subject, profoundly ignorant; besides, he shows for it a sovereign contempt. However, he recommends that great attention be paid to the correspondence which exists between certain regions of the great world, or the universe, and certain parts of the little world, or the human body. He insists, that the physician should have at his fingers' ends, the knowledge of the regions in man, named (after constellations), the dragon's tail, the ram, the polar axis, the meridian line, the east, and the west, etc."†

The pathological doctrine of Paracelsus is distributed in a great number of writings; but M. Malgaigne having analyzed only the Great Surgery, has extracted only what concerns ulcers, because it is especially in the knowledge of this kind of lesions that the physician of Zurich passes for an expert. The substance of his doctrine on this

* Œuvres d'A. Paré; introduction, t. I., p. 215.

† Paragrani, tract II, De Origine Morborum, lib. IV, et alibi. See Daniel Le Clerc, Essay on a Plan to serve as continuation of the History of Medicine. p. 806.

subject, is as follows: Ulcers all proceed from the corruption of the salt that is in us, and they vary in nature according to the variation of the salt itself. Consequently, Paracelsus proposes to divide ulcers into ulcers from nitre, scrofula; ulcers from common salt, certain ulcers not painful, whose seat is generally at the bend of the arm, or in the ham; ulcers from vitriol, corroding ulcers of the legs; ulcers from alum, gangrenous and fetid; ulcers from realgar, malignant ulcers of all species, etc., etc." I put aside, adds M. Malgaigne, after this enumeration, that which treats of ulcers of another sort; those which are caused by celestial influences, or the corresponding constellation of the parts; or from special fluxes, comparable to springs which issue from the ground. There are those which originate in chaos, that is, from the air which is in us; others are produced by enchantment; in a word, it is a multiple doctrine, odd and difficult to comprehend in its totality, and we may occasionally doubt if the author understood it all himself."*

Since, then, if in considering only a single work of Paracelsus, and that the best of all, it is impossible to deduce from it a pathological theory, at all sensible, what would it be if founded upon all, or the greater part of the writings of this prolific author? We would fall into an inextricable labyrinth, into a mass of unintelligible nonsense. Sometimes he says that all diseases arise from two sources, one of which he calls *ex Cagastro*, the other *ex Iliastro*. The diseases of the order *ex Cagastro*, come from natural seeds, like apples, pears and other fruits; these are hydropsy, gout, jaundice, etc. The diseases of the order *ex Iliastro* are formed by the decomposition of something. In this order are comprised, the plague, pleurisy, fever, etc. Sometimes he admits five causes of diseases, to which he gives the odd name of morbific beings. The first of these causes is the Divinity himself, *ens Dei;* the second, the influence of the stars, *ens astrale;* the third, the forces of nature, *ens naturale;* the fourth comprehends the errors of the imagination, evil influences, and enchantments, under the denomination of *ens spirituale*, or *pagoycum;* the fifth and last, the *ens veneni*, comprising venoms and poisons, whether natural or artificial.

Moreover, he invokes another etiology; mercury, sulphur, salt, enjoy here the *role* of universal nosogenic agents. He assures you, for example, that the mercury which is in the animal body, being in close relationship to ordinary quicksilver, produces, by its volatility, mania, mortification of the ligaments, tremblings, etc.; that if this volatility becomes excessive, or if it is joined to acrimony, mania, phrenzy, madness, etc., occur; if, on the contrary, the mercury is chilled, it causes

* Introduction aux Œuvres d' A. Paré. Paris, 1840. t. I., p. 217.

tremblings of the hands and feet, or of the head alone, lethargy, contortions of the mouth, eyes, etc.

Sulphur produces various kinds of fever, apostema or phlegmons, jaundice, etc. In separating itself from the salt, it causes pleurisy, inflammation of the stomach and liver, megrim, diseases of the eyes, tooth-ache, ear-ache, etc.

The salt gives the colic, causes stone and gravel, gout of the feet and hands, sciatica, etc. When it becomes dissolved it causes a diarrhea; if it coagulates, it causes indurations, obstructions; if it volatilizes too soon, it causes ulcers, the itch, prurites, erysipelas, cancer, herpes, etc.*

I have not shown by far, all the phases of this fantastic nosology; but I pause for fear of annoying the reader, without being able to offer him in remuneration, any thing valuable. I pass to his therapeutics, where we shall have, possibly, the happiness to meet with something useful: some ingenious perception; for this author does not cease to repeat that it is not by vain words that the physician is to make himself known, but by his works in curing the patients who are confided to him; and on that point, he boasts of having cured a crowd of strange diseases, in persons abandoned by all physicians. Nevertheless, here are some witnesses who diminish considerably the success with which he praises himself. Andrew Libavius, a distinguished physician, and great chemist, and who was director of the gymnasium at Cobourg, and nearly cotemporaneous with Paracelsus, assures us that the latter injured a multitude of people, and did not cure them; that he killed a good number, or put them in a worse state than he found them; in short, that he could not cure himself of a cough, the gout, and a muscular contraction with which he was affected.† Oporinus, his fervent disciple, recounts, that when his master was called any where to treat internal diseases, he could never stay there more than one year, and he was accustomed to say that he should not practice any longer in one place." It appears, indubitably, from these evidences, that if the rash practice of Paracelsus procured some unhoped for cures, it was prejudicial to a much greater number, and that, in short, he did much more harm than good.

Pretended reformer, who counts as nothing the authority of the most worthy writers, and relies on nothing but his own experience, did he really consult experience when he proposes, as an excellent means to discover the specific virtues of remedies, to observe what he calls the

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* Daniel Leclerc, Essai d'un plan pour servir à la continuation de l' Histoire de la Médecine, pp. 809, 810.

† Neo. Paracelsica inquibus vetus Medicina defenditur adversus G. Amwald, cujus liber de Panacea excutitur. Francofurti, 1594, 8vo.

*signature of things?* The partisans of the occult sciences, designated by this term certain marks and variations of color or figure which are met with in various substances, and which indicate, according to them, the essential properties of these substances. Thus, the little yellow spot that is seen on the flowers of the euphrasia, which they compared to the pupil of the eye, was, according to their system, an indication of the curative virtue of this plant, in diseases of the eye. So the seeds of the pomegranate, and various kernels, from their resemblace to the teeth, appeared to them as a proper remedy in tooth-ache. The pulmonary or lung wort, on account of its spongy tissues, and the dark maculæ on its leaves, had the credit of being exceedingly efficacious in lung affections. Citrons were supposed to be excellent cordials, because their form represented, rudely, that of the heart, and because their golden colour resembled that of the sun, which corresponds to the heart, in the macrocosm. See, also, in the work of Oswald Croll, entitled *Basilica Chymica*, the signatures of a multitude of other substances.

Paracelsus has been very much praised for having made use of chemical or spagyric remedies. It is true, that though he did not invent them, since they were known before him, he has at least contributed powerfully to vulgarise their use, and this is the sole merit which no one can contest with him. But was this merit very great and very profitable to humanity? I will briefly examine this question.

In the first place, it will be admitted, that the more a remedy is energetic, the more the circumspection and discernment which is required in its employment. In the second place, every one knows that the chemical preparations recommended by Paracelsus, such as the salts of gold, antimony, mercury, etc., have in general very great energy. If, then, we demonstrate that he administered these remedies with a blind rashness, it will be at once conceded, that in his hands, and those of his disciples, they would produce infinitely more harm than good. Now, it is an agreed fact, the proof of which may be seen in the writings of this author, that he advised a crowd of very energetic medicaments, without any decided indication, without prescribing the doses in which they should be administered, or the manner of preparing them—an omission so much the more reprehensible, as he employed remedies but little known. Each one of his recipes, as he says, is nothing less than an admirable secret, which cures all diseases, or nearly all, and he alone possessed the knowledge of its preparation, which he describes, for the most part, in an unintelligible manner. Let us see how he describes the philosophers' tincture, the tincture of antimony, of corals, of potable gold, etc. A single example will suffice to show how little care he exercised in pointing out their curative indications. "It should be

known," he says, "that as antimony purges gold only, and consumes all other metals, it is the proper agent to purge the human body, and no others; for in regard to forces and perfection, man has a great similitude to gold; whence it follows, that antimony only brings man and gold to a supreme degree of perfection and purity, while it destroys, consumes, and corrupts, everything else. The nature, then, of antimony, is purgative; yet it does not produce evacuation of feces, and other excrements, but above all other remedies which act insensibly, it drives out that which renders man impure, and having purged the cause of diseases and ulcers, it brings man to a supreme degree of health. Now, the most eminent philosophers have labored hard to prepare it, but in vain; nevertheless, it was finally perfectly elaborated, but I must say by my own efforts. This, then, is the great remedy with which we must commence all cures, because the ruin and destruction of many patients, caused by the errors and obstinacy of physicians, would thus be prevented."* He describes, immediately afterward, the manner of extracting the *very noble, very precious, and most divine essence of the flower of antimony, which cures all diseases.*

When we reflect on the energy of a great number of spagyric compositions, when we think that several of them are violent poisons, instead of blaming the wise circumspection with which most physicians have admitted them into practice, they are entitled to our praise for this prudence, especially at an epoch when the process for obtaining them in a uniform and pure state was not known. We are frightened at the idea of the ravages which the reckless and exaggerated administration of these heroic remedies must have produced. Now that their effects are much better known, and when we know how to obtain them in a uniform and pure state, where is the man who dares generalize their use? Who would dare proclaim a salt of gold, or antimony, or other preparation, as an infallible remedy in all diseases? None but a shameless charlatan, or a physician of the lowest degree of ignorance, would pretend to do it. Thus, then, the extravagant eulogies which the Paracelsists offer to certain chemical preparations, the blind and abusive employment which they made of them, the frequent and formidable accidents of which they were then the source, far from having recommended such remedies to rational practitioners, must have, on the contrary, discredited them, and would doubtless have retarded their introduction into the materia medica, if more sensible experimenters had not not been found—men more patient and skillful, to connect with veritable indications these heroic but dangerous agents. Thus, then,

* Grande Chirurgie, lib. III., part 1, chap. v.

from whatever point of view we regard the influence of Paracelsus, in physiology, pathology, and therapeutics, we find it injurious, and even retrograding, when submitted to the test of a severe analysis.

Nevertheless, we ask ourselves how it is that in an age eminently erudite, a man of scarcely any learning, whose skill in practice was very questionable, whose successes were mingled with many reverses, was able to exert on his cotemporaries so remarkable an influence, and fill the world with the echo of his renown? A historian who has made a particular study of the doctrine of Paracelsus, to which he has devoted the half of a volume, shall answer this question for us.

"A revolution," says Sprengel, "which is based upon mysticism, finds access much more easily to the common people, than one which is effected by good sense; because the chimeras of the imagination always present themselves under the liveliest colors, and excite the mind to much more activity than the severe conclusions of cold reason. In the sixteenth century Germany had enlightened entire Europe by her spirit of reformation. The mighty genius of Luther rendered to his cotemporaries, and to the latest posterity, the inestimable service of giving so heavy a blow to mysticism, that Catholicism and scholastic theology were forever put down.* Paracelsus adopted the same plan, but the following circumstances prevented his system finding as favorable and as general a reception as that of the reformer in theology.

"First, Medicine is a science of experience, and to possess it, it must be learned. It rests on reasonable principles drawn from observation; consequently, a doctrine which rejects the testimony of reason, and which represents experience as a useless thing, could not have much success among physicians. Secondly, the system of Paracelsus was based not only on mysticism, but also on the grossest fanaticism. In fact, superstition reigned despotically throughout the whole course of the sixteenth century; but to give to these same prejudices the appearance of a scientific doctrine, was an idea that shocked good sense too much to be generally received. Finally, Paracelsus was not the man to insure success to his system; he was a barbarian, an ignoramus, who despised all the sciences, for the sole reason that he was ignorant of them all. Though he speaks much of divine light as the source of universal knowledge, his manners and his vagabond life certainly did not prove that he enjoyed much of its blessed influence.

"Nevertheless, his doctrine found in Germany, especially, more partisans than could have been reasonably supposed. From the calculation which I have made of the known successors of Paracelsus, it results that

* It must not be forgotten that these are the views of a Protestant.

three-fourths of them were German born, but, for the most part, men without education, and without any knowledge of the sciences, who threw themselves, soul and body, into the arms of his mystic system, because they found there amply what could supply their lack of instruction, and incompetency. Others held to the medicaments and secrets of Paracelsus, seeking to reconcile his theory with the system of Galen, or at least to purify, perfect, and render it more plausible."* Finally, the Society of the Rose of the Cross applied his theories much more logically than had ever been done before, to theology and philosophy.

Thus this pretended reformer, though feigning to invoke reason and experience, addressed himself to the imagination, to superstitious prejudices, and mysticism. His system, if we can so name an informal assemblage of incongruous propositions, by dispensing with all university studies, favored idleness and ignorance, and tended to replunge the human mind into the darkness of barbarism, from which it had with so much difficulty extricated itself. The school which he founded or propagated is nothing else than a school of ignorance, deception, and boasting—in a word, of medical dishonesty; a school of which Thessalus of Tralles had been the corypheus in antiquity, which John de Gaddesden revived in the middle ages, and to which Paracelsus gave a new development.†

### CONCLUSION OF THE WHOLE CHAPTER.

The men whose portraits we have just sketched, formed, with their numerous sectators, a separate class of physicians, who, abandoning the slow march of observation and reason, flattered themselves with having, at a stroke, attained omniscience without having made scarcely any effort at study, by the direct inspiration of the Divinity, or by commerce with demons, or by the discovery of the secrets of magic and alchymy. The importance of the part which they played for several centuries, required of us to say something of them; but we think that we would be far from our aim if we accorded any more space to the exposition of their errors, which seem to belong to the history of mental diseases, as much, at least, as to the history of the transformation of science. If some of these fanatics were impostors and tricksters, the greater number were miserable hypochondriacs of the monomanial species—dupes of

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* Hist. de la Medecine, sec. IX., chap. III., t. III., p. 333.

† See the portrait of Paracelsus drawn by Francis Bacon, cited by Tourtelle in his Histoire Philosephique de la Médecine; Paris, 1804, t. II., p. 343. See also my pamphlet on Charlatanism en Médecine, inserted in the Revue Médicale, April number, 1839.

their own hallucinations. History shows us that such pretended sorcerers, alchymists or astrologers—such self-styled inspired of God or possessed of the devil, were so fully convinced of the reality their visions as to contend for them in the midst of tortures, to their latest breath.

## CHAPTER XI.

### PARTIAL EFFORTS FOR REFORM.

While the partisans of the Occult sciences strove to overturn, completely, the scientific edifice of antiquity, other reformers, less bold and more sensible, without attacking in its whole the old monuments, the object of veneration for so many ages, disclosed partially its defects, and so opened the way to a radical reform. Without repudiating in toto, like preceding ones, all the traditions of antique science, they desired that they should not be blindly received but after subjecting each one to a serious examination, those only should be accepted which appeared in conformity with reason and experience, while the rest should be rejected, or subjected to such modifications as were deemed necessary. These were generally enlightened men, and, at the same time, free thinkers—friends of regular progress, and not of destruction, which has always, a momentary retrograde effect. They were few in number during the sixteenth century, and did not produce any capital work; but history must take note of their efforts, because they were the first to foresee the new route in which succeeding generations must enter, and which would lead to a complete renovation of science.

I. I place at the head of the reform physicians of the sixteenth century, John Argentier of Castel-Nuovo, in Piedmont. He taught successively in Naples, Pisa, and Turin. In his introductory discourse, pronounced in the University of Naples, he divides physicians into two classes. "The first, persuaded," he says, "that no improvement can be made on the writings and doctrines of the ancients, limit themselves to their study, and to ascertain their true sense, without permitting themselves to add or retract anything; the other are equally convinced of the necessity of reading and meditating on these great authors of antiquity, yet do not think that all which they advance is to be received without discussion, but that it is proper to modify, change and improve them as far as possible."*

* In Artem Medicinalem Galeni Commentarii.

He does hesitate to pronounce against various points of the theory of Galen, and contends with those who have adopted them too servilely, like J. Fernel, and others. He assumes, for example, that all parts of the body take their nourishment from the blood, and denies that there is any part which is nourished by the semen. He proves that the secondary qualities of the body, such as hardness, softness, asperity, etc., do not depend on primitive or elementary qualities. He rejects the multiplicity of spirits with which the Galenists peopled the human machine, and recognises only one kind, and especially treats of the class of animal spirits as chimerical, for the reason that the reticular tissue, which is supposed to prepare them, does not exist in man.* Unhappily, these few new and sound ideas are overwhelmed in long and futile dissertations. After having displayed very great subtilty, and expended a quantity of words to refute a definition of Galen, the author proposes for it another, which is neither clearer nor more correct. He devotes seven large folio pages to a discussion on the first aphorism of Hippocrates: "Life is short." In fine, though styled a reformer, Argentier clings too much to the ideas of Hippocrates, Aristotle and Galen; which he explains, comments upon, and discusses, with great prolixity, limiting his reform to changing a few definitions and divisons, without making any remarkable innovation in the practice.

II. Such was not Leonard Botal, who, without pretending to revolutionize science, like the former, introduced into the practice very important and bold innovations. Before him, the employment of blood-letting was excessively restrained. We have seen that Brissot, after a long struggle, only succeeded in establishing it a little oftener in pleurisy: Botal undertook to generalize it, or, at least, to extend it to numerous affections in which it had not been employed. He advised abundant and repeated sanguineous emissions, not only in pleurisy, peripneumonia, apoplexy, and angina, but also in gout, dysentery and putrid fevers; not only among subjects vigorous and in the strength of age, but also among children, old persons, pregnant women, and cacochymic individuals. He carried the paradox so far as to sustain that an infirm old man should be bled from four to six times a year, and that it was a good custom to open a vein every six months, in healthy individuals.

Botal, native of Astia, in Piedmont, served at first in the character of surgeon in the French army. Later, he became successively physician to the kings Charles IX. and Henry III. His position, as we see, must have given weight to his assertions, which, however, did not prevent the Faculty of Paris from condemning his method as heretical and

* In Artem Medicinalem.

dangerous. He composed several works, the most remarkable of which is a memoir entitled, *On the cure of Diseases by Blood-Letting.* In this book he develops his paradoxical ideas on the utility of frequent venesections. "The blood," he says, "being destined to nourish and sustain the body, not to injure and clog it, can only fulfil its destination in proportion to its purity and proper quantity. If, then, it surpasses the just quantity, and if it offends in any of its qualities, so as to be inconvenient, it is necessary to correct it; now, this is done efficaciously by blood-letting, according to the testimony of Hippocrates, Galen, and especially as is demonstrated by the happy results of this practice."

If the theory of Botal is very contestable, the numerous facts on which he supports it are very much less so. It can not be denied that he obtained extraordinary success by emissions of blood; but as he cites only his successes, it is reasonable to suppose that he does not cite all the cases in his practice. In the second place, it is necessary to remember, that this physician having collected his earliest observations in camp, on young and vigorous subjects in the full strength of age, it is probable that he was influenced afterward by the recollection of the happy results which his method produced for him in the beginning. Finally, it may be said in his defense, that if he exaggerated the employment of sanguineous emissions, his cotemporaries made use of it too timidly, whence it follows that, all things considered, his practice would be as advantageous, and even more so, than that of his rivals.

The memoir of Botal goes out of the line of ordinary compositions of this epoch, as well in regard to its form as to its matter. We do not find in it, as in the others, subtile arguments and long theoretical digressions. This author says scarcely anything on theory, but, on the other hand, mentions many facts. Without disdaining the authority of the ancients, on which he sometimes depends, he invokes, especially, observation. In fine, he unites independence and energy of thought to elegance and purity of style.

III. Laurence Joubert, Chancellor of the University of Montpelier, and consulting physician of the king of France, Henry III., was also a liberal thinker. In his annotations on the books of Galen, he sometimes approves, and again he condemns the doctrine of this author. Among other new opinions, he emits the following: "That the humors never putrify in the living body, that there is only an effervescence in them, in fevers called putrid." His treatise on *Popular Errors* had an unheard of success for the epoch when it was published. In less than six months, there were retailed 4600 copies. which must appear prodidigious, when we consider the small number of persons who were at that time able to read. Some of the circumstances that contributed to this

popularity, may be summed up as follows: First, the book was written in the common language, which was a new thing in works treating of subjects connected with Medicine, and which placed it within reach of a crowd of new readers of all classes. In the second place, it was diversified with jovial and vulgar anecdotes. In short, it includes, on the subject of generation and parturition, certain technical details, for which men of the world, unused to these matters, are always greedy. The author, moreover, though affecting a light, paradoxical and wanton manner, respects, at heart, religion and good manners. He justifies as much as possible, in his preface, the nudity of some of his illustrations, and to shelter it from too severe censures, he dedicates his book to *the very high, very excellent. and studious Marguerite de France, the very illustrious Queen of Navarre, daughter, sister, and wife of kings.*

I shall not essay to analyze a work which treats of a multitude of disconnected and often unsuited subjects; but I will detach some fragments, by which the style and spirit in which it was written may be judged. The author commences by a question of high philosophy, which he discusses with independence and discernment. "There is," he says, "a great contest between the princes of philosophy, Plato and Aristotle, on the condition of the rational soul, which they both agree to be celestial, divine, immortal, and separable from the body. But Plato thinks that it does in itself know all things, which become effaced from its memory and are lost the moment it is submerged and, so to say, mired in our humid and soft bodies. Then, in proportion as the body gradually dries, the soul becoming again clearer and more brilliant, is restored, and gradually recognizes everything, as if it learned it anew; for, according to the views of Plato, what we call learning is, really, only remembering.

"On the contrary, Aristotle affirms that our soul unites with the body in entire ignorance of all things, but is capable, and very promptly, of conceiving of all things, being at first a simple spirit, but capable of all things by degrees. He compares it to a polished tablet on which nothing has been drawn, but ready to receive every color and figure which may be put upon it. This opinion has had more partisans than the former, and is conceived to be true, by the best philosophers. For if we become wise by the mere dessication of the body, it follows that we should have no need of doctrines, or in other words, of instruction; and the mind could commit no error, (provided that the exterior senses were entire and sound,) both of which conclusions are notoriously absurd."

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* Erreurs Populaires au fait de la Médecine et Régime de Santé, par Laurent Joubert. Paris, 1587. Preface to the first part.

We shall not follow farther this author, in the development of his philosophic thesis. We will only observe that he did not seek, as Fernel, to conciliate the opinions of Plato with those of Aristotle, but that he clearly pronounces himself in favor of those of the two which seem to him the best. We see here already a free and clear thinker, who professes for the ancients neither an idolatrous worship nor a blind contempt, but who chooses according to his knowledge and taste. After having sustained the conclusion just stated, Laurence Joubert explains the motives which have induced him to undertake the work, and the end he proposes to attain.

"Madam," he says, "I leave, for the present, to the theologians the instruction of the soul in the Christian faith, to engrave this early upon it, to color it with piety, to feed it with sound doctrine, and to perfume it with odors agreeable to God and profitable to our neighbor, by a holy and exemplary life, conforming to doctrine and proceeding from piety, having its strength in faith of the highest character. I hold to what is my vocation, that is, the care of the human body, to preserve its health and restore it when deranged, by the help of the grace of Almighty God, who has created Medicine and established the physician for the necessities of man. In this vocation I have for a long time (for at least twenty-five years) labored, for a double aim—the one, to instruct the youth in the said science, as well by writing as by verbal teaching, sincerely and diligently giving them the first traits, watering it with good precepts, making them acquainted with the most secret remedies, and exercising them in discussion and practice; the other, to extinguish and annul several false opinions and errors (offsprings of ignorance) which have long been valued and in fashion in Medicine, Surgery, and Pharmacy—I say, among the professors of the three departments of our Art, from which has resulted many abuses and nullities.

"But all this is trifling, compared with the popular errors in Medicine and the regimen of health, which for the most part are so stupid and vulgar as to merit much more ridicule than reprehension. Nevertheless, because they are very prejudicial to the life of man, it seems to me that we must neither despise nor dissimulate them, but rather remonstrate with the ignorant vulgar in regard to what and how they err and go astray, trying to lead them in a better path. For they do not act maliciously or with an intention to injure, but for the best, according to their opinion. It belongs, then, to physicians to remedy this evil, to correct which I have taken great pains for a long time, and remonstrated with many. But that has been of little moment, as long as the greater number are incapable of reason and discussion. Finally, I have determined to remonstrate with the people, showing up their errors by writing,

and in order to set up a judge wholly unsuspected by them, yet, nevertheless, capable of correcting such abuses.

"Now, having long reflected who this judge should be, the excellency of your majesty, madam, has seemed to me the most proper one in the world, by the rare virtues which every one admires in you, your most angelic spirit, your exquisite judgment, your honest curiosity and studious desire to know all things, and also on account of the leisure you possess for such a pastime, which will serve you as a great recreation for several hours a day, to understand and examine the reasons I have deduced against popular errors, in order to overturn them. I shall, however, fear the venomous and envious tongues who will endeavor to find something unbecoming in what I propose to your majesty on this subject; for I am constrained frequently to say things which appear too filthy and lascivious; but knowing that one may honestly speak, as I have done, on all the natural functions, as well as on all, even the most secret and hidden parts of the human body, which chaste eyes do not fear to see represented in public by drawings and sculpture; remembering, too, what Dion recounts of the virtuous Roman princess Livia, wife of the emperor Augustus, who saved the lives of men condemned to death because they had exposed themselves before her entirely naked—she saying, that to the observation of a virtuous woman they differed in nothing from statues, I consider myself fortified by such reasons, as by defensive arguments, against which the poison of slanderers can avail nothing with you."*

We see by these citations—first, that Joubert, in writing the book we have mentioned, proposed for himself a serious and useful end—that of combating prejudices no less injurious than ridiculous; secondly, that he justifies very adroitly the licenses of expression in which he has indulged, as well as the odd idea he had, of dedicating such a book to a woman. Besides, it appears that the very studious queen of Navarre does not show herself on this occasion more severe than the Roman empress, and that she deigned to accept the dedication of the Chancellor of the University of Medicine at Montpelier. We may judge, by the following announcement of several of the questions agitated in this work, if it was not calculated to excite the curiosity, I will not say of a princess, but of the generality of readers.

The entire work is divided into two parts, at the close of which, is added a mixture and collection of other questions and popular errors, collected by him and his friends. The following are some of the propositions, each of which forms the title of a chapter. "Why are there

* Erreurs Populaires au fait de la Médecine et regime de santé.

more physicians than other sorts of people?' 'It is not profitable to sick persons to have several physicians, but one alone, who should be very assiduous.' 'Can a woman conceive without having her courses; in other words, without her natural purgatives?' 'Against those who keep up sexual intercourse, with a view of having children, and of those who indulge but seldom, in order to have less.' 'If there is any certain knowlege whether the child will be male or female, and whether there will be one or two?' 'Why is a pregnant woman advised to put her hand on her posteriors, if she cannot satisfy her desires?' 'Is it good to make a woman sit on the bottom of a hot kettle, or put on her belly the cap of her husband, in order to have a better delivery; and what are the best means for accouchement?' 'Is it true that a woman delivered in full moon, will afterwards have a boy, and if in new moon, a girl?' 'An exhortation to all mothers, to nurse their own children.' 'Is there a certain sign of the maidenhood of a girl?' 'On the superstitious and false opinions of women, who believe that the milk of a woman will dry up in her breast, if some of it be heated.' 'Is it true that truffles, artichokes, and oysters render men more keen for venereal pleasures?' &c."

The author treats these delicate matters in a manner worthy of the subject, mingling, as we have said, his serious dissertations with amusing anecdotes. Thus, after having shown the ridiculous presumption of so many men assuming to act as physicians without understanding any thing about it, and that too, in the presence of physicians, he narrates the following adventure: "It is said that the duke of Ferrara, Alphonso d'Este, at one time proposed, in a familiar way, the question, in what calling are most men engaged: One said shoemakers, another tailors, a third carpenters, mariners, pettifogers. and laborers. Gonelle, his famous buffoon, said there were more physicians than any other class of men, and made a bet with the duke, who denied it, that he would prove it in twenty-four hours. The next morning Gonelle left his lodgings, wearing a great night-cap, and a cravat tied around his chin, then a hat over all, and his mantle drawn up over his shoulders. In this attire, he took a route leading to the palace of his excellency, through Angel street. The first one he met asked him what was the matter; he replied that he had a raging tooth-ache. Ha! my friend, said the other, I know the best recipe in the world against it, and told it to him. Gonelle inscribed his name on his tablets, pretending that he was writing down his recipe. A step further on he found two or three together, who all asked the same question, and each one gave him a remedy. He inscribed their names as the first; and thus he pursued his course very gingerly to the end of the street, not meeting a single person who did not offer him a recipe different from the rest, each one saying that his

was well established, certain, and nearly infallible. He wrote down the names of all. Coming to the lower court of the palace, he found himself surrounded with gentlemen, (for they all knew him,) who, after having learned his affliction, compelled him to take their recipes, which each one said was the best in the world. He thanked them all, and wrote down their names. When he entered into the chamber of the duke, his excellency cried out, 'Eh! what have you got Gonelle?' He replied very piteously and complainingly, 'tooth-ache, the worst that ever was.' To which his excellency replied, 'ha! Gonelle, I know a thing which will drive off the pain at once, without touching the tooth. Mr. Antonio Musa Brussavola has never employed a better one. Do so and so, and incontinently you will be healed.' Suddenly, Gonelle threw down his head dress, and his attire, crying out, 'and you also, my lord, are a physician! Look at my list, and see how many others I have found, between my lodgings and your palace. Here are nearly two hundred, and I have only passed through one street. I will engage to find ten thousand in this city, if I go every where. Find me as many persons in any other business.' This is an appropriate story; in fact, every one meddles with medicine, and there are few men who do not think that they know a great deal about it, and even more than physicians themselves."*

I have dwelt somewhat at length on this work because, under its light form and without affecting any pretension to scientific depth, it has, nevertheless, an end eminently useful, namely, to dissipate a multitude of errors which, when practiced, produce bad results; and in attempting to enlighten the vulgar, was he not laboring for the propagation of sound doctrine? However, I must say that we find in the book of Joubert the sanction of certain erroneous theories which then reigned suprem in science; but this was an inevitable defect, for an author would not be able to combat vulgar prejudices with other lights than those of his own age.

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* Erreurs Populaires, part., liv. I., chap. IX.

## CHAPTER XII.

### MEDICAL ORGANIZATION AND ACCESSORY INSTITUTIONS.

The separation of Medicine from the priesthood, which began to take place at the close of the preceding period, was completed during this, to the great advantage of both professions, for though the Pagan priest could practice the Healing Art without derogation to the rules of his order, the Catholic priest could not, without defilement and a violation of the canons of the church, descend into a mass of sensual details which the study and practice of Medicine required. From the sixteenth century, celibacy ceased to be obligatory on physicians in the kingdom of France, and they no longer obtained ecclesiastical benefices. At the same time, Surgery, which had long been separated from Medicine, reapproached it, and this approach, as we have seen, turned to the profit of science.

From this date, the professors of the Surgical College of St. Come were put on the same level with the professors of the University, and enjoyed equal privileges.

In fine, the establishments destined to propagate medical instruction, faculties and schools of Medicine, increased, and those which already existed were developed. Amphitheaters for dissection were opened in every State in Europe. The hospitals and dispensaries—in a word, all the institutions devoted to the comfort of the afflicted poor, followed the upward march. The governments turned more of their solicitude toward the regulation of medical police and hygiene, and then commenced an amelioration in the sanitary state of the people.

#### RESUME OF THE ERUDITE PERIOD.

The historical period whose state we have just sketched, offers a most interesting spectacle. We have seen the human mind, long buried in a lethargic sleep, gradually awake, and mark its first steps by discoveries of the highest importance; the love of letters became general, as the means of instruction multiplied; science, enclosed in the cloisters during the middle ages, became secularized as in the times of Hippocrates, Plato, and Aristotle, but with the means of propagation more numerous and efficient. The first effect of this expansive movement of the mind was, to re-direct the attention of the learned world toward the primitive sources of the beautiful and the true; the debris of Greek literature was exhumed from the dust of the libraries of the convents, and it gradually took the place of the Arabic literature, its degenerate daughter.

Soon the monuments of antique science were insufficient for the expanding human mind. They were submitted to a criticism more clairvoyant and severe, which revealed many defects, and weakened very much the respect in which these precious relics had been held. Then adventurous and impatient minds attempted to overturn the entire edifice of human acquirements, and rebuild it in a day; but their work—fruit of a morbidly excited imagination, having neither reason nor experience to sustain it—fell before the light of discussion, as the dreams of an unquiet night fly at the approach of day. A few men, however, succeeded in uniting the worship of antique traditions with the love of novelties; they comprehended that to reform was better than to destroy, and that all change is justifiable only as it includes a progress and an amelioration. Consequently, they contented themselves with proposing partial modifications of the ancient doctrines, with a view to improve, not to destroy them.

# VIII. REFORM PERIOD.

COMPRISING THE SEVENTEENTH AND THE EIGHTEENTH CENTURIES.

## GENERAL CONSIDERATIONS.

We have just seen the systems of Aristotle and Galen resist the premature attacks of the partisans of the occult sciences, and gather around them the great majority of minds, by means of some partial modifications claimed by the less bold though more sensible innovators. The long duration of these systems, the almost unanimous accord of the great men of antiquity and of the middle ages, in their favor, formed a precedent so respectable that a general disposition to disdain them had not yet been learned. It is not then astonishing that the most eminent men in science should prefer them to the eccentric and mal-elaborated theories of the founders of the occult doctrines—to those of restless, capricious, and haughty minds, who pretended to arrogate to themselves the sceptre of knowledge, without taking the trouble to prepare a scientific reform whose wisdom and greatness would justify, in the eyes of enlightened men, so high a pretension.

In the meantime the domain of natural sciences enlarged from day to day; observation had enriched it with a multitude of new facts which harmonized with, or discredited prevailing doctrines. The moment approached when the need of a radical reform was felt in nearly every branch of human science. Men whose knowledge equaled their genius, began to appear and take the direction of the intellectual movement, and substitute for the decrepid theories of the schools, those which were younger, stronger, and harmonized better with the totality of known phenomena. The worship of the ancients is succeeded by an immoderate desire to shake off their yoke, and to revenge in some sort their long tyranny. On this account I have given to this the name of Reform Period, which characterizes perfectly, if I am not mistaken, the general tendency of minds, the predominant thought and culminating fact of the epoch.

At the beginning of this period a Florentine nobleman, one of the finest geniuses of modern times, Vincent Galileo, carried the torch of regeneration in physics. Without other guide than his intelligence he abandoned the route of subtile speculation to follow that of observation only. In this way he reaped an ample harvest of surprising truths, one of which would suffice to immortalize his name. He first calculated the law of gravity; he discovered the weight of the atmosphere, and he asserted the movement of the earth on its own axis and around the sun. Nothing was wanting to his glory, not even the seal of persecution. He was cast into the dungeons of the holy inquisition, for creating too dazzling a light before the eyes of his cotemporaries. At the same time Kepler traced the course of the heavens for Newton, by his bold and happy hypotheses.

While the astronomers, extending the limits of the universe, and without pretending to read in the stars, as the astrologists, the destiny of kings and of nations, determined with a marvelous exactitude the laws which maintain harmony in the movements of these sublime bodies, the naturalists discovered by the aid of the microscope, a new world close by us, under our hands, which the ancients had not even suspected. Their eye perceived in a drop of liquid myriads of organised beings, living and moving in the narrow space, as in the midst of an immense lake. The chemists, abandoning the vain and darkened researches of alchymy, reaped on their part an ample harvest of useful and unheard of discoveries. In place of reasoning theoretically, after the manner of the philosophers, on the nature, form and combinations of the material elements, they studied every thing experimentally; they learned to modify and overcome them at pleasure—in short they endowed man in some degree with a secondary creative power. The ancient philosophers had no more rude adversaries than they, and their labors contributed more to destroy their dogmas than those of any other class of savans. Bernard Palissy,* a simple potter of Agen, and Andrew Libavius, doctor in medicine, native of Halle, in Saxony, were, during the sixteenth century, the true princes of chemistry, the precursors of the experimental doctrine of Chancellor Bacon.

Medicine made also, at the same time, numerous and great conquests, which led to frequent revolutions in its theory. The truth of that aphorism, "*experience is deceptive, and judgment difficult,*" was never more evident than during this period, in which we see melt away, not only Galenism, but also several other newly hatched systems, all of which had had the pretention of being founded in experience, and

* See Œuvres de Bernard Palissy, by M. Cap, Paris 1843, 12mo.

had been emitted and extolled by men of superior merit. But, as will appear in the course of this history, all these systems had the defect of considering the phenomena of the animal economy in one aspect only, and neglecting others not less important. All committed the no less grave error of passing, in their abstractions, beyond the limits of sensible phenomena. For this reason they have all vanished, or suffered great modifications, after an existence more or less ephemeral.

We proceed now, according to our custom, to expose, in the first place, the material progress in each principal branch of the science, and then the varieties of the most important doctrines. Nevertheless, it will happen more than once, as has already frequently occurred, that after having reported a fact, or an observation, we shall join it at once to some theory; because it is sometimes impossible, or at least very inconvenient, to separate from a phenomenon its theoretical explanation.

## CHAPTER I.

### ANATOMY AND PHYSIOLOGY.

The anatomists of the sixteenth century had described the apparent and easily accessible parts of the human body with such scrupulous exactness, that they had left little for their successors to do in this particular; consequently, the latter turned their attention in another direction. Minute and comparative anatomy, and experimental physiology, offered a vast field of new truths, till now but little explored. They directed their observations toward these objects, and their efforts, as we shall see, were crowned more than once with brilliant success.

#### CIRCULATION OF THE BLOOD.

Before describing the researches which have immortalized the name of William Harvey, it will be proper to recall, succinctly, what were the acquisitions of his predecessors, on this function of the animal economy.

The liver was considered, from time immemorial, as the organ of sanguification. It was supposed that the veins took their origin in this viscus, and that they were the sole order of vessels that contained, naturally, the blood. It was imagined that the fluid flowed from its principal reservoir to all parts of the body, and returned to its source through the same canals, by an undulating movement, similar to the flux and reflux of the sea. The arteries were supposed to contain, in

their normal state, vital spirits only, of which the heart was the great reservoir; but it was admitted that in certain diseases, the blood could make an irruption into the arterial channels. Such was the doctrine of the Asclepiadæ, and particularly of Erasistratus.

Galen modified it by demonstrating that the arteries contained blood, at every period of life. Neither was he ignorant that this liquid is poured into the right cavities of the heart by the great veins; but he believed that only a small quantity passed from the right ventricle into the lungs, by means of the pulmonary artery, while the major part came directly, according to him, to the left ventricle, by passing through the porosities of the interventricular septum. This opinion of Galen was uncontested till the middle of the sixteenth century.

At that epoch the theologian Michael Servetus, the same who perished a victim of the jealousy of Calvin, dared to deny the passage of the blood through the septum of the ventricles. He contended that the blood which comes into the right cavities of the heart, passed by the pulmonary artery to be distributed in the lung, whence it returned into the left ventricle, by the pulmonary veins. This was a luminous thought, and a great step, in fact, toward the truth. Shortly after, R. Columbus demonstrated, anatomically, the conjecture of Servetus, by showing the real use of the valves of the heart.

A. Cesalpin approached still nearer the truth. He explained, in the same manner as Columbus, the course of the blood through the lungs, and added, that the last arterial ramifications communicated with the veins—that the blood and vital spirits passed from the arteries into the veins during sleep, which seems to him proven by the swelling of the veins and the diminution of the pulse, at that time.

They knew, also, the existence of valves in the veins. It was demonstrated by experiment, that if an artery is tied, on a living animal, the blood ceases to flow, and pulse stops below the ligature; but if, on the contrary, a vein was tied, it shrunk above the ligature, and tumefied below it. Such was the state of science at the beginning of the seventeenth century. There was only one step to take to find the true course of the blood, but that step was difficult, as we may now readily understand.

William Harvey, native of Folkstone, in the county of Kent, made his first studies in his own country. Afterward, he traveled for his instruction, in France, Germany, and Italy, and remained at Padua during four years, to hear the lectures of Fabricius d'Aquapendente. He returned to his country with the title of Doctor, in 1602, and established himself in London, and was elected sometime afterward, a member of the College of Medicine. Named regent in 1613, he commenced

to make known his doctrine on the circulation of the blood, in his public lectures, but he did not publish the result of his researches till 1628, after having submitted them for fifteen years to proofs and counter proofs of every kind.

Here is his own story, in which he depicts the obstacles he met with in his efforts to discover the truth: "Devoting myself to discern the use and utility of the movements of the heart in animals, in a great number of vivisections, I found at first the subject so full of difficulties that I thought, for a long time, with Fracastor, that the secret was known to God alone. I could distinguish, neither, in what manner the systole and dioistole took place, nor at what moment the dilatation and constriction occurred, owing to the celerity of the movements of the heart, which, in most animals, is executed in the twinkling of an eye, or like the flash of lightning. I floated, undecided, without knowing on what opinion to rest. Finally, from redoubled care and attention, by multiplying and varying my experiments, and by comparing the various results, I believed I had put my finger on the truth, and commenced unraveling the labyrinth. I believed I had seized the correct idea of the movement of the heart and arteries, as well as their true use. From that time I did not cease to communicate my views either to my friends, or to the public in my academical course."*

M. Dezeimeris appreciates as follows the discovery of the English physiologist: "To its intrinsic merits, the work of Harvey on the circulation of blood has, besides, the merit of arrangement. The author first clears up his course, by removing the errors of antiquity; he describes, next, the movements of the heart in the living animal, he shows its muscular structure, the alternate contractions of the auricles and ventricles, the influence they must exert to drive the blood with force into the arteries, determined in that direction by the mechanism of the valves; in fine, he establishes the whole system of the circulation. He terminates the treatise by original observations on the difference of its structure, in different animals, at different periods in life."†

So much care and circumspection in the research for truth, so much modesty and firmness in his demonstration, so much clearness and method in the development of his ideas, should have prepossessed every one to favor the theory of Harvey; but, on the contrary, it caused a general stupefaction in the medical world, and gave rise to much opposition. This theory, which appears to us to-day so natural that we conceive with difficulty why it was not found much sooner, was nothing

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*Guillelmi Harvey, Exercitatio Anatomica de Cordis et Sanguinis motu, cap. I.

†Dictionaire Historique de Médicine, at the word HARVEY.

less than a revolution in physiology. I shall not pause to describe all the phases of the controversy it excited; it will be sufficient to say that it continued no less than twenty-five years, and that there was not a man at the time who made any pretension to a knowledge of anatomy and physiology, who did not take an active part in it. Even the naturalists and philosophers themselves, did not remain indifferent. René Descartes was one of the first to declare himself in favor of the new doctrine of the circulation, and supported it by some experiments, but especially by the authority of his name. John Walœus, a celebrated anatomist, and professor in the University of Leyden, confirmed it by new observations. Finally, Plempius, of Louvaine, one of the most fiery adversaries of this theory, gave way to the force of truth, and passed with a free will and publicly over to the ranks of its defenders, in 1652. This was a great triumph for Harvey, and brought so much additional support to his doctrine as nearly to silence all opposition.

During these long debates the conduct of Harvey was always dignified and firm. He mingled in the polemic which his discoveries had excited, only to add new proofs and new experiments to those he had already published. One, only, of his adversaries obtained a direct response from him. This was John Riolan, professor in the faculty of Paris, and one of the greatest anatomists of his age. Harvey attached much value to his support. In seeking to convince him, he spoke always with the greatest deference, giving him, several times, the epithet of prince of the Science. The opinion of J. Riolan was, in fact, of immense weight among his cotemporaries; but whether from excess of respect for the ancients, or from envy against moderns, he combatted, with as much violence as obstinacy, the two finest discoveries of the age, namely, that of Harvey, and that of Pecquet, which we shall soon consider.*

Harvey had the satisfaction before his death, to see his theory of the movements of the heart and of the blood universally adopted. He left, besides, interesting observations on generation, in man and in animals—on midwifery—and on the structure and diseases of the uterus.

The further progress of science only confirmed the doctrine of the circulation of the blood. In 1661, Malpighi, professor at Bologna, demonstrated for the first time, by the aid of the microscope, the progression of the blood globules in the small vessels. He confirmed the reality of the communication which had been said to exist between the arteries and the veins, and gave a clear demonstration of their last branches. In 1690, Anthony de Leeuwenhoek, naturalist of Delft, was enabled to see,

* See Lettres de Gui Patin, new edition, with notes by M. Reveille. Paris.

with his perfected microscope, the movements of the blood in the smallest vessels, and gave to several persons important testimony of his observations.

Leaving far in the rear his precursors, R. Lower and J. M. Lancisi, J. Sénac published in 1749, his great work on the *Structure of the Heart, its Actions and Diseases.* The author puts forth, in his preface, some maxims of medical philosophy stamped with wisdom, among which we find the following: "Theory reduced to consequences drawn from facts alone, is the light of practice. But in following the track of nature by the light of experiments and observation, we soon arrive at the barriers where the mind is abandoned to itself. In going beyond these limits, it can rest only on conjectures, where error is inevitable." "While some elevated the force of the heart to a weight of three millions of pounds, others reduced it to the weight of eight ounces. A rival of Newton and Leibnitz (M. d'Alembert), was more wise, who said that none but the foolish attempted to estimate the force of the heart's action."* Notwithstanding this severe criticism given against those who attempted to calculate the vital forces, Senac, in the course of his work, gives a conjecture on this subject. Having remarked that a weight of fifty pounds, attached to the foot, was raised by the pulsation of the artery, he estimated, approximately, the force of the heart at two hundred pounds.

He describes with much care, the structure of the heart, and the direction of its fibres, of which the external appeared to him oblique, and the internal arranged in spiral. These latter take their origin, according to him, from the fleshy columns of the aortic ventricle. He placed among the remote causes of the movements of the heart, the animal spirit, which is transmitted from the brain and the spinal marrow, to the muscle, by the intermediation of the nerves. This spirit, he thought, was a fluid extremely elastic, which the impression of the blood on the delicate tissue of the parietes and columns, put in action. In the first place, the vena cava, by these alternate constructions, caused the blood to enter into the auricles, which, stimulated by the presence of that liquid, contract, in their turn, and push it into the ventricles. These last commence at once to act, and drive forward the blood which they contain. Thus, these three machines, by the aid of the fluid which they enclose, act successively, while the vital spirit subsists in the tissue of the brain and nerves. The heart is only the prime mover, or determining and conditional cause of the movement of the blood, but

* Traité de la Structure de Cœur, de son Action de ses Malacies, II. edition; published by A. Portal, Paris, 1774, T, I., preface, p. 32.

its force is insufficient to produce it alone; we must add to it the elasticity of the arterial coats, and above all the action of their muscular fibres and their nerves. In regard to the pathology of the central organ of the circulation, which forms the last part of the treatise, we will say simply, that diagnosis, in it, is carried to as high a degree of perfection as could be attained prior to the discovery of percussion and auscultation.* This work, in which analysis was pushed to its utmost limits, made a sensation in the medical world. His cotemporaries spoke of it only in terms of admiration. Morgagni, when refering to it, applies to the author the epithet of great; but it has become much out of date since the perfection of auscultation and percussion has carried the diagnosis in thoracic diseases to an unhoped for success. Sénac was physician to Louis XIV., after Chicoyneau, and he had the entire confidence of his sovereign.

ON RESPIRATION.

If the researches concerning the mechanism and end of respiration, give not results as prompt and decisive as those relative to the circulation of the blood, they were not, however, unfruitful, as is very plain in comparing the notions which antiquity has transmitted to us on this subject, with those that were possessed at the close of the last century.

The ancient anatomists described, summarily, the exterior form of the lungs, their situation in the thoracic cavity, their spongy consistency, as well as the cartilagino-membranous structure of the trachea, and the first divisions of the bronchia; they did not carry farther their dissections, but they thought that the extremities of the bronchia anastamised with the radicals of the pulmonary veins, which they named on that account, arterial veins: that is to say, veins conducting the atmospheric fluid of the lungs into the heart.

On these vague and partly erroneous anatomical data, they built the following theory: The air drawn into the lungs by the heat of the heart, the reservoir of the vital spirits, enters by the trachea and bronchia. In penetrating into the last bronchial ramifications, it is rarified: the thinnest part passes into the pulmonary veins, to be carried to the heart, where it serves as material for the fabrication of the vital spirit: its grosser parts were exhaled with the fuliginosities of the heart, during expiration. According to this theory, respiration had two purposes—one to refresh the lung, which being of a porous and inflamable nature, would be in danger, without it, of taking fire by the contact of the heart—the focus of animal heat; the other to furnish the pneuma or

* As it is no part of my plan to enter into any account of these important discoveries in science, I refer the reader to the treatisis of Laænnec and Bouillaud.

ether, which was employed by the heart in the fabrication of animal spirits. Such were the ideas formed on the mechanism and end of the respiratory function—ideas which reigned, without submitting to any important modification, down to the seventeenth century.

The discovery of the small and great circulation sapped one of the bases of this theory, for they showed that the pulmonary veins carried to the heart no other liquid than the blood, and that no substance, liquid or gaseous, could re-flow from the aortic cavities into the lung. In 1661, Malpighi demonstrated the cellular structure of this viscus. He announced that the bronchial ramifications terminated in vesicules lined by a vascular rete, and communicated with each other.

About this time much more careful examinations were instituted than had ever been before, in regard to the manner in and forces by which the movements of the chest are effected. J. A. Borelli, Adrian Helvetius, and many others, among whom the indefatigable A. Haller holds the first rank, made, on the same subject, interesting experiments, which may be summed up as follows: First, during inspiration the thoracic cavity is enlarged in all respects, by the action of the diaphragm and intercostal muscles, aided occasionally by the action of the muscles which extend the neck, the shoulders, and the head—in short, of the superior regions of the chest. Secondly, in expiration, this same cavity diminishes by the simple relaxation of the inspiratory muscles. Ordinarily this relaxation is sufficient to enable the thorax to diminish, and return upon itself. In other cases, the triangular muscle of the sternum, the abdominal, the dorso-lumbar, in a word, all the muscles that connect the parietes of the thorax to the inferior regions of the trunk, excepting the diaphragm, concur to produce the expiratory movement. Thirdly, there never exists an empty space between the lungs and the side of the chest. The pulmonary organ follows the cavity which incloses it—it dilitates when it expands, and diminishes when it contracts. Fourthly, the air is not drawn into the chest by the heat of the parts, but by the tendency of all gaseous fluids, to maintain an equilibrium. When the thoracic cavity is expanded by the action of the inspiratory muscles, the air which it contains becomes rarified, and is no longer in equilibrium with the external air, which rushes in through the opening of the trachea. This is the mechanism of respiration.

That being settled, different pneumatic theories were, by turns, adopted and abandoned. Here is one of the most remarkable: the Iatro-mechanicians assumed, that in respiration no particle of air penetrates into the blood, but that the alternate movements of the expansion and contraction of the chest have the effect of breaking and attenuating the molecules of the venous fluid, and mingling them with the lymph and

the chyle, and changing thus the venous into arterial blood. Besides, they thought that the unfolding of the pulmonary vessels, during inspiration, favors the passage of the blood through the lungs.

Some physicians renewed the theory of the ancients, in modifying it; they thought that the air inspired, being colder than that which is expired, serves to moderate the heat of the heart, and the effervescence of the constituent parts of the blood; that the impression of the cold air against the parietes of the pulmonary vessels serves to condense the venous blood, and changes it into red blood, without the addition of any new principle.

All these theories had to give way before the exact knowledge of the changes that occur in the atmosphere during respiration. It was ascertained by rigorous experiments, that the air which enters into the chest has lost, when it passes out, a portion of its oxygen, which is replaced by a nearly equal quantity of carbonic acid and aqueous vapor. These phenomena, which had been conceived by Mayow, in 1668, were perfectly established by subsequent observations. It had always been observed that the blood which appears black in issuing from the vein, in phlebotomy, becomes red in contact with the air. In fine, direct observation proved that a similar change of color takes place in the blood, in its passage through the pulmonary vessels during life. Goodwin was the first, who, having opened the thorax of a frog, saw the sanguineous fluid, which came black, and in appearance venous, to the lung, acquire a fine red color in traversing the tissue of the organ. Hessenfratz filled a soaked bladder with venous blood, and plunging this membranous pouch into an atmosphere of oxygen gas, saw the blood change from black to red.*

Toward the close of the eighteenth century, Lavoisier, resting on the facts we have just named, proposed a pneumatic theory of seducing simplicity: "When the atmospheric fluid," says the celebrated chemist, "has reached the pulmonary vesicles, a portion of its oxygen passes the extremely delicate walls of these vesicles and combines with the excess of carbon and hydrogen of the venous blood, to form the carbonic acid and acqueous vapors which are found in the expired air. The venous fluid, thus freed from its excess of carbon and hydrogen, acquires, instantly, that fine red tint which characterises the arterial blood, and constitutes, according to the views of many physiologists, hæmatosis.

The respiratory function was assimilated, by this theory, to the combustion of a lamp, in which the carbon and hydrogen of the oil, by

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* I say nothing yet of the experiments of Bichat, which belong to the nineteenth century, by the date of their publication.

combining with the oxygen of the air, produce carbonic acid and vapor. During this double combination, there is evolved a great quantity of caloric, which Lavoisier regarded as the source of animal heat. A somewhat general law in zoology seemed to confirm this interpretation. It had been observed that among animals provided with lungs, the natural temperature is so much the more elevated as the respiratory apparatus has extent, and as they absorb a greater quantity of air.

The purely chemical theory of Lavoisier was received with enthusiasm by the learned world. It seemed to shed a clear light on two great phenomena of the animal economy—hæmatosis and calorification—of which no one had before given any satisfactory explanation. Nevertheless, it was soon perceived that it was subjected to very grave objections, two of which, for the present, we will give. If it is true, said one, that the lung is the focus of all the animal heat, its temperature should be much more elevated than that of the other viscera, which observation does not show; on the contrary, all experiments show that the temperature of the lungs does not differ sensibly from that of other organs; secondly, in this theory are set aside both the action of the lung proper, and of the nervous influence—an influence which might have been inferred, *a priori*, and whose existence was put beyond doubt by subsequent and conclusive experiments.*

### LYMPHATIC SYSTEMS.

The discovery of the lymphatic vessels and their functions, was no less remarkable than that of the circulation of the blood. If it had less éclat, it is because it was not, as the former, the work of one man, but its complete development took place only by a slow gradation. Our mind, like our eye, is strikingly impressed only when the light reaches it suddenly.

It appears that Herophilus and Erasistratus had perceived in the mesentery of some animals, white vessels, which were connected with the mesenteric glands. They took them to be arteries, full of air. Galen, who had an opportunity of seeing them, treated their remarks as chimerical. He believed that the veins of the mesentery absorbed the chyle in the intestines, and carried it to the liver, where it was transformed into blood. This opinion reigned until the middle of the seventeenth century. However, as early as the year 1563, Eustachius had described the thoracic duct of a horse, but did not suspect its use. In 1622, Gaspard Aselli, professor of anatomy at Milan, discovered the

* See researches of Dupuytren, Ch. Dumas, M. Blainville, and others, on the effects of the section of the pneumogastric nerves.

lacteal, or chyliferous vessels, on a dog which was killed immediately after eating, for purposes of dissection. Accident led him to this discovery, according to his own account, which is as follows: "I perceived," he says, "on the walls of the intestines and in the folds of the mesentery, very fine white filaments, which I took at first to be nervous filaments; but having pricked one by mistake, I saw issue from it a white, creamy liquid. Struck with astonishment, I took pains to establish this unexpected phenomenon before the eyes of spectators, among whom there were two very distinguished physicians, Louis Settala and Alexander Taddini."

On the following days, Aselli repeated the same experiment on other dogs, with equal success, and acquired the certainty that the white threads were vessels which drew the chyle from the intestines. He observed the valves with which they are supplied, but supposed that they all met in the pancreas, to be continued to the liver, which has always been regarded as the organ of sanguification.

Finally, in 1647, John Pecquet, being still a student at Montpelier, discovered the reservoir that bears his name, and which is formed by the union of all the lymphatic trunks of the inferior members, and those of the organs contained in the abdominal cavity.* This reservoir, situated between the second and third lumbar vertebræ, is the beginning of the thoracic canal, which is varied in structure, sometimes straight, again flexed, sometimes single, and sometimes double, lying along the anterior face of the dorsal column, and empties itself into the left subclavian vein. Pecquet followed the canal to its termination. Having ligated it, he saw it swell below and empty itself above the ligature. He studied with closer attention than any who had preceded him, the course of the lacteal vessels, and convinced himself that none of them were connected with the liver, but that all, on the contrary, emptied themselves into the common reservoir of which we have spoken.

The discovery of Pecquet gave the last blow to the ancient theory which attributed to the liver the function of hæmatosis, and it confirmed the doctrine of Harvey on the circulation of the blood, but, like that, was strongly opposed. If we were astonished to find at the head of its opponents the celebrated detractor of moderns, John Riolan, we are much more astonished to see the illustrious W. Harvey make, on this occasion, common cause with the Dean of the Faculty at Paris.

From that time the lymphatic vessels and glands became objects of research by a great number of anatomists. Among those whose labors contributed most to develop the disposition and uses of this order of

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* J. Pecqueti Experimenta nova anatomica. Paris, 1654, 4vo.

organs, we must name John Vesling, professor in the University at Padua, who discovered the thoracic canal about the same time as Pecquet, the celebrated Th. Bartholin, Ruysch, Olaüs Rudbeck, W. and J. Hunter, Hewson, Cruikshank, and above all, Mascagni, who was the first to give a graphic description of this whole apparatus.* A certainty was now acquired that the lymphatics, disseminated in infinite number in all parts of the body, in a very variable and irregular form, were arranged generally in two layers, the one superficial, the other deep-seated; that they were frequently interrupted in their course by small, rounded, oblong bodies, called conglobate glands, or better, ganglions, and that their functions consisted in carrying into the torrent of circulation, first, the chyle, which they draw from the surface of the intestines; secondly, a transparent, colorless, or slightly pink-colored humor, nearly tasteless and inodorous, called lymph, which they collect from all parts of the body.

### NERVOUS SYSTEM.

We have seen that Hippocrates and his successors in the school of Cos, had no precise notion of the nervous system; they confounded, under the term of *νευρα*, nerves, tendons, ligaments, membranes, and true nerves. Aristotle was but little in advance of the Asclepiadæ in this matter; he regarded the brain as an inert mass, without sensation, and supposed that the nerves originated in the heart. According to him, they strengthen the articulation and aid the movements. Sprengel attributes then, wrongfully, a knowledge of these organs to the philosopher of Stagyrus,† but more correctly, further on, gives the honor of the same discovery to Herophilus.‡

It appears, in fact, according to the most certain traditions, that the physician of Chalcedonia was the first to unravel a little, the functions of the nervous system. Rufus, the Ephesian, who lived under Trajan, says that Herophilus distinguished three sorts of nerves: the first, which serve for sensations and voluntary movements, proceed from the brain and spinal marrow, as ramuscles; the second and the third are destined to unite the bones, and the muscles to the bones. We see, by this passage, that Herophilus had not yet entirely shaken off the prejudice which confounded tendons, ligaments, and membranes with the nerves.

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* Vasorum lymphaticorum Corporis Humani Historia et Icomographia, Senis, 1787, 4vo.

† *Ibid.*, t. I, p. 384. ‡ *Ibid.* t. II, p. 435.

Galen himself was not exempt from this error, as any one may be convinced by the following glance of the description which he gives of the nervous system. After having spoken of the two membranes that envelop the encephalon, which we know as the dura-mater and the arachnoid, he points out the great division of the encephalic mass into cerebrum and cerebellum; he describes each of these parts, their respective position, volume, consistency, the two substances that enter into their composition—the one white, the other gray—the depressions and convolutions on their surfaces, the ventricles, etc. He regards the cerebrum as the seat of the rational soul and the origin of the sensitive nerves, while the cerebellum, as well as the spinal marrow which proceeds from it, give rise, according to him, to the nerves of motion, which he thought had more consistency than the others. To prove that the nerves are the primary agents of sensibility and mobility, Galen cites the following experiment: "If we cut a nervous cord, or place a ligature around it, immediately the parts situated below the section or ligature lose the faculty of feeling and motion." The alternate movements of expansion and contraction of the encephalon, did not escape him, and he regarded them as a species of respiration of the brain. He gives to the great sympathetic nerve the name of intercostal, and says it is derived from the vagus nerves, which form the sixth pair in his classification. He observed the ganglions that are met with on their track, but he never suspected their use. Does it not seem, from this, that Galen distinguished perfectly the nerves from the tendons and the ligaments? Nevertheless, he says, in another place, that the extremities of nervous ramifications are spread out into membranes, ligaments, and tendons. He places the sense of touch in the membranes which envelop the muscles, and to which he gave the name of aponuroses, on account of their supposed nervous origin.

The anatomists of the sixteenth century described with more exactness than Galen the various branches of the nervous system. They distinguished better each part, followed farther the distribution of vessels and nerves, and corrected some material errors of antiquity on this branch of anatomy. They assured themselves, for example, that the nerves of the cerebrum, cerebellum, and spinal marrow, served equally for sensation and motion. Nevertheless, the most of the ancient prejudices concerning the organs of sensibility and mobility, as well as the manner in which they executed their functions, still existed. A sufficient number of experiments had not yet been made, to establish a rational opinion on this subject, consequently only more or less plausible conjectures could be formed. There was so much uncertainty on this subject, that a Cesalpinus could, without a too great paradox, renew the

theory of Aristotle which made the heart the origin of sensation and the seat of the soul. Very much later, toward the end of the seventeenth century, Baglivi published a theory which referred the vital movements to two structures—the heart and the dura mater. He supposed that the latter is agitated by a continual oscillation, which is transmitted from the membranous envelope of the nerves and thence to all parts.*

There remained, therefore, at the commencement of the Reform Period, an ample harvest of discoveries to be made on the texture and functions of the nervous system in general, as well as in each of its divisions, in particular. The progress of comparative anatomy, and experiments on living animals, during this period, cast vast light on neurology. At the close of the last century, the vascular organization of the gray substance of the brain was known; it was no longer a question, that the encephalon was the organ of sensation and voluntary motion, and the seat of the mind. The splendid researches of R. Vieussens, Haller, J. F. Meckel, Vicq d' Azyr, A. Scarpa, Th. Sœmmerring, and of a great number of other physiologists, had put this fact beyond question. They had demonstrated that the dura-mater receives no nerves, and that it is destitute of all sensibility and could not be the source of any movement. It was shown, also, by rigorous observations, that all the nerves coincide and are united at the base of the brain, in that part termed the protuberance annulare, from which it was inferred with some probability, that this was the sensitive center of the animal—the place where all the sensations centered, and from which go forth all voluntary and reflex actions. Nevertheless, other observations, of which we shall speak farther on, led to the belief that the encephalon is a complex organ, each division of which fulfils a special function. At this time Xavier Bichat proposed to divide the nervous system into two very distinct departments, though united by numerous communications. One of these departments, composed of the encephalon, the spinal marrow, and their annexes, subserving, according to him, the operations of the understanding and the will, is the principal organ of the life of relation or animal life; the other, including the great sympathetic, its ganglions and plexuses, gives impulse to the acts of organic or individual life—to those functions in virtue of which an individual transforms into his own structure nutritive molecules, and casts off those which are effete, or worn out, and injurious to the system. This division, which has been an object of deep criticism, offered to its author opportunities to develop many interesting observations.

During this period the ancient supposition, that the membranes were

* Baglivi, Opera Omnia, Lugduni, 1745, page 241.

entirely derived from nervous ramifications, completely disappeared. Very delicate dissections proved that the nerves, far from terminating in aponeuroses, separate from their neurilema, and preserve only their medullary pulp at their termination. Hence it was concluded, that it is in this last condition that the nerve receives the immediate impression of objects, and transmits it to the brain, by the intermediation of the nervous filaments. In this way, exploration was made of all the functions of sensation—sight, hearing, smell, taste, and touch.

How different is this explanation, so simple, based on the anatomical disposition of parts, and separated from the imaginary hypotheses believed by the ancients, and accepted by the moderns until the beginning of the seventeenth century! Empedocles appears to have been the first who, to render an account of the sensitive impressions, supposed an elementary affinity between exterior objects and the organs of sense. He thought that there exists in each of our organs a force which governs and attracts from other bodies the molecules similar to its own. The eye, for example, being of a resplendent nature, attracts, he said, the luminous molecules from bodies; the ear, which is of an airy nature, must attract sonorous particles. The nose has a vaporous, the tongue a humid, and the organ of touch, an earthy constitution. Aristotle, Galen, and their successors, did not make any special modifications in this theory. They added only to the hypothesis of Empedocles the consideration of spirits, of which they made as many species as we have different senses. These spirits, invisible and impalpable, were secreted by the brain, and transmitted to the external organs of sense by the nerves. The visual spirits connected themselves with the organ of sight, where they put themselves in communication with the luminous particles of bodies; the auditive spirits were connected with the ear, where they were associated into sonorous particles, and so on for the other senses.

From the beginning of the seventeenth century, the celebrated mathematician Kepler, announced that the crystalline lens is not, as had been supposed till that time, the seat of vision, but that its function is to refract the rays of light. He observed that the image of objects is painted on the retina. The Jesuit Scheiner confirmed these observations, and extended them, and demonstrated that the expansion of the optic nerve is the essential part in the organ of sight. Many other learned men, and especially physicians, submitted the various membranes and humors of the eye to an attentive examination, so that this organ, so marvellous and complicated in structure, is one of the best understood in the organism. The researches of the great Newton, on light and colors, contributed also to perfect the theory of the visual function.

At the same time, Casserius and other anatomists studied the organ of hearing. The osselets and the small muscles of the internal ear, and the semi-circular canals, were described. The acoustic nerve was followed in its windings and ramifications. Duverney published a remarkable monograph, in which, by the aid of comparative anatomy, he corrects several errors which had escaped his predecessors, and adds new details to what was already known. R. Vieussens established the true seat of audition in the membrane which lines the drum and labyrinth. Lastly, Cassebohm, Valsalva, Morgagni, Geoffroy, Lecat, Comparetti, Scarpa, and others, added several improvements to the notions of their predecessors, on the organs of sense.*

Many conjectures have been emitted, and many researches and experiments attempted by moderns to explain the functions of the nervous system. Some have regarded the nerves as tubes of extreme delicacy, containing a subtle fluid, which receives the impression of objects and transmits them to a central point, situated in some portion of the brain. Others represent the nervous fibrillæ as cords, all ending at a common center. Charles Bonnet renewed the hypothesis of Hartley, according to which each nerve is supposed to contain as many distinct fibers as it receives varied sensations. For example, the organ of sight must be composed, according to the naturalist of Geneva, of as many kinds of nervous filaments as there are colors; that the organ of taste must have as many varieties as there are different flavors; and so for the rest.

Thomas Willis was one of the first to consider the brain as an assemblage of various apparatuses, and assigned special functions to some of its divisions. He placed the seat of common sensation in the corpora striata —the imagination in the corpus callosum—the memory in the cortical substance, etc. Cabanis, to explain the influence of the physical on the moral man, compared the functions of the encephalon to those of some other viscera. He said that the brain effects all the operations of the understanding, as the stomach and intestines accomplish the digestion of food—as the liver secretes bile, the kidneys urine,† etc.: but is not this an abuse of induction? and can one establish a perfect similitude between a material effort exercised on visible and palpable substances, as the alimentary bolus, which we may follow in its successive transformations, and the elaboration of thought—the abstract and immaterial result of a function whose mechanism is unrevealed by our senses?

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* Besides these several authors, great interest will be excited by consulting the fine researches made in our times by G. Breschet, on the organ of hearing and audition in man, and the mamifèrs, birds and fishes.

† Rapports du Physique et du Morale, de l'Homme, par M. L. Peisse.

Thus far we have given only hypotheses; the following opinions appear less conjectural, and are the result of more attentive observations: P. Camper, having compared a great number of heads of men and animals, remarked that, in proportion as we descend from the higher classes to those that are inferior in the animal scale, the forehead recedes more and more, and the jaws become more elongated. So he thought that the facial angle is the most certain index of the development of the intellectual faculties. Was it from a similar observation that the Greek artists gave to the heads of their divinities an elevated and prominent forehead?*

Pinel and other pathologists had already observed that in various states of mania, delirium, or partial insanity, certain mental faculties, such as the memory, attention, judgment, imagination, will, etc., were abolished or suspended, while others preserved their free exercise, or even acquired more energy; and they inferred from this, that each of the faculties must have, in the brain, its own seat, or, in other words belong to a special section of that organ.

After a series of patient and ingenious observations, Gall thought he might emit the following propositions: First, the development of the mental faculties is in constant proportion to the volume of the brain, other things being equal; second, each part of this viscus is the instrument of a distinct and independent faculty; third, the cranium being molded in nearly an exact manner upon the encephalic mass, it can be determined, by the inspection of the bony box, what is the volume of certain portions of the encephalon, and from this determine what faculties are predominant, or are defective, in an individual submitted to an examination. At the same time, Gall introduced an entirely new classification of the faculties of the understanding; but though he commenced publishing his discoveries before the close of the eighteenth century, their complete manifestation and propagation belong to the nineteenth century, and for this reason we shall carry no farther our exposition of his system.†

### ON GENERATION.

The generative functions in viviparous animals, such as man, may be divided into three periods, namely, impregnation, pregnancy, and accouchement. We shall speak here only of the first, the other two being referred to the chapter on obstetrics. This subject always occupied the reflections of philosophers and physicians, who, in default of positive data, did not fail to erect hypotheses, more or less ingenious.

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* See the work of Camper, published at Utrecht in 1791–92.

† Anatomie et Physiologie du System Nerveux; Paris, 1810–1819.

Galen describes with sufficient exactness the genital parts of man. He very justly observed that the artery and spermatic vein of the right side took their origin, one from the aorta, and the other from the vena cava, while the artery and spermatic vein of the left side emanated from the renal artery and vein. The same disposition is met with in women, in regard to the ovarian arteries and veins. Moreover, this anatomist believed that there existed a perfect analogy between the genital organs of the two sexes, with this sole difference, that in the male these organs have been pushed outward by the heat of his temperament, while in the female they are retained within the body, owing to her natural coldness. He called the ovaries the testicles of the female, and supposed that in copulation they secreted a spermatic liquor analogous to that in man. He believed, also, that the womb was divided into two cavities, which proves that he had only examined that viscus in the females of animals.

On these anatomical data, partially true, he founded the following explanation of the act of generation: "The womb," he said, "having received, at the time of coition, the seminal fluid of the man and of the woman, the two are mingled. But that of the woman only serves to nourish the other, and to produce one of the envelopes of the fetus. The semen of the male, almost as soon as it is received into the womb, is changed into membranes. Some of these membranous textures remain always in the same condition, others become gradually thickened and hardened, and are transformed into cartilages, these into bones, which serve as the framework of the body. Others are folded or hollowed, and elongated in a way to form the tubes which are called arteries or veins. Others, in fine, are extended into filaments, and produce fibers or nerves. The body of the animal being thus arranged, each part afterward attracts that which is necessary to it."

In relation to the procreation of the sexes, Galen shared the opinion of Hippocrates, who taught that the right testicle in man furnishes the seed for males, the left for females; that the male embryo was always developed in the right cavity of the uterus, while the female occupied the left.

Such is a summary of the knowledge that antiquity transmitted to the middle ages, on the reproductive function, and which came down, without any modification, to the sixteenth century. Then only were efforts made to rectify some of the material errors of Galen, on the conformation of the genital organs of women. It was demonstrated, for example, that the womb had but one cavity. Fabricius d'Aquapendente made the first experiments, in order to ascertain the particular part that each portion of the sexual organ played in the act of reproduction. He killed pullets after coition, and saw that among the little yellow

round grains, disposed like a bunch of grapes, which constituted the ovaries, that there was one which enlarged, in which vessels were developed, and which at length became detached and traversed the oviduct, or the *cloaca*, to be thrown off in the form of an egg.

At a later period, Harvey repeated the same researches, on bitches, and obtained analogous results. He states positively, that the matter furnished by the female, in the generative function, is a germ. He emits the premature and too general opinion, that every animal proceeds from an egg. DeGraaf experimented on rabbits, and made still more precise observations. In explaining the texture of the genital organs of women, he substituted the word ovaries for the inconvenient term of female testicles.

In order to ascertain if what Hippocrates and Galen had said, was true, touching the function of the right testicle, which they said always generates males, and the left one females, he made the following experiments: first, he took away the right testicle of a rabbit, and afterward coupled it with a female; she brought forth, in due time, young of both sexes. Then he took away the left testicle of another rabbit, with the same results. In order to find out, also, if each ovary furnished ovules of both sexes, or of one only, he ligated, in one female rabbit, the right ovarian duct, and in another one the left. Each one bore young of both sexes: whence it is permitted to conclude that the theory of Hippocrates on this subject, which had been confirmed by Galen, and adopted by all antiquity, must be classed among fictions.

A mass of hypotheses were conceived, to explain the mysterious acts of generation, but it is not our purpose to mention them here. We shall simply say that they may be reduced to two great classes, namely, epigenesis and evolution.

In the first, it is assumed that the new being is formed, in all its parts, by the aggregation of molecules possessing reciprocal affinity, and which arrange themselves in a certain order, nearly as occurs in the phenomenon of crystilization. A special force, to which were given in turn the names of *nature*, *pneuma*, *soul*, *archeus*, *plastic force*, *essential force*, *formative force*, etc., presides over the union and co-ordination of these particles, and impresses on the new being its form, character, and properties.

The second class admits that the embryo pre-existed under some form, and being vivified by the act of fecundation, it then commences a series of developments, which must lead to the construction of an individual similar to the one whence it proceeded. The partisans of this system were divided into two sects—the ovarists and the animalculists.

The ovarists contended that the matter furnished by the female is an

egg, containing the germ of the new being, and besides, a substance which serves for the nutrition and earliest development of the embryo. This system was founded on the observation of oviparous animals. In these, indeed, the female furnishes, evidently, an egg, which even in a large number of cases, is laid, before the connection of the sexes, and is fecundated externally.

The animalculists contend that the new individual proceeds from an animalcule contained in the sperm of the male. Leeuwenhoek was the first who, by the aid of the microscope, remarked in the semen of animals a prodigious quantity of small bodies, executing spontaneous movements. Later observations have proved that these animals, termed spermatazoa, always exist in recently ejaculated sperm, and that similar ones are not found in any other humor of the body—that they are different in different species of animals, but are not identical in the same species. They are not seen in the sperm of an animal, except at an age capable of reproduction, and are absent before, as well as after, that period. Their number is so prodigious that fifty thousand have been estimated in a single drop of the sperm of a cock, the volume of which is scarcely equal to that of a grain of sand. If in any way, as by electricity, distillation, etc., these animalcules are destroyed, or if they be withdrawn from the sperm, that liquor loses immediately its prolific virtues. Such are, in resumé, the facts on which the animalculists support their system. The great Buffon adopted this system, after modifying it, and popularized it by the charms of his eloquence. For ourselves, to explain in two words our sentiments on the subject of the various systems of generation, imagined up to this time, we say, in the language of Horace: The philosophers have disputed on this subject from the beginning of the world, and the question is still undecided,

*Grammatici certant, et adhuc sub judice lis est.*

### ON VITAL OR ORGANIC PROPERTIES.

We have seen that the ancients admitted that there are in crude matter two kinds of properties—one, which they termed elementary, agrees with our chemical properties, and was supposed to proceed from the elements which entered into the composition of all material substances. These elements, as is known, were four in number—fire, air, earth, and water. The qualities which bodies assumed, from their relative proportions, amounted to eight: thus, a body could be simply hot, cold, dry, or moist; or hot and dry, hot and moist, cold and dry, or cold and moist.

The second order of properties, recognized by the ancients, comprehended hardness, elasticity, porosity, etc.—in a word, what we term

physical properties. These were supposed to depend on the figure, the number, and arrangement, of the atoms, or unalterable particles which constitute bodies. By means of these two orders of properties the ancients flattered themselves to be able to explain all the phenomena of inanimate nature.

But in regard to living beings—man, for example—it was impossible to see, in the exercise of his functions, such as generation, nutrition, locomotion, intelligence, etc., anything but the simple play of elementary and physical qualities. Moreover, the greatest philosophers and physiologists in all time, agreed to regard each individual of this class as endowed with an intrinsic, primitive force, named by different writers, essence, nature, soul, spirit, pneuma, etc., which superintended, with admirable instinct, the regular accomplishment of all the functions, unless interfered with by some material obstacle.

Among physicians some were especially attentive to the effects of this intrinsic force; they studied carefully its tendencies and followed most scrupulously all its indications: they were called Hippocratists. Others had regard, principally, to the elementary qualities of the humors; these were the Humoralists, of whom Galen was the highest representative. Others, in fine, who regarded chiefly the physical properties of the solids, and in particular, porosity, attributing to the tisssues only the qualities of expansion and contraction. These were named Methodists. As to the Empirics, they disdained physiological considerations, in which they were wrong: in a science as complicated and as difficult as that of pathology, we must borrow light from all the other sciences. But they would have been right, if they had said to the other sects: you are not ignorant that the phenomena of the animal economy are produced by three orders of forces; nevertheless, each of you considers only one of those orders and regards the rest as of little or no value: each one of you is therefore in error. Take for example any function, say the secretion of saliva. Is it not evident that in this function, the vital forces, the physical forces and the forces or properties elementary, namely the chemical, concur simultaneously? Now who can tell the part played by each of these three orders of forces in the act of salivary secretion? No one. It is therefore impossible to form an exact idea of this function, as long as an effort is made to separate, by a mental analysis, the forces which concur to produce it. The function itself must be studied, as it is presented to our observation, that is to say, synthetically and experimentally.

At the restoration of the sciences the ancient physiological systems were reproduced under different forms: the iatro-mathematicians, versed in the calculations of the physical forces, assumed to explain the functions

of the animal economy by the laws of mechanics. They could see in the secretions, the circulation, and the nutrition, nothing but the effect of the elasticity of tissues, of the calibre of vessels, of the friction of liquids, etc. The chemical physicians took into consideration, exclusively, the mixture of chemical elements: they spoke only of alkaline or acid humors, gases, salts and fermentations. The Hippocratists had especial regard to the influence of the intrinsic force of living bodies, a force which they named archeus, soul, or vital principle. Up to this time as is seen, the physiologists made no distinction between the properties of organic and inorganic matter; to explain certain acts of the animal economy they had recourse to the intervention of an immaterial or quasi immaterial substance, as the soul, the archeus or vital spirits; they knew nothing of vital forces properly called.

About the middle of the seventeenth century Francis Glisson, professor in the University of Oxford, recognized in the living solid tissues a particular force which he termed *irritability*, and which he regarded as a sufficient cause for all the phenomena of life. He said that all the tissues are endowed with this force in different degrees, and proposed to divide it into natural, vital, and animal, accordingly as it is manifested by movements more or less apparent, with or without the concurrence of the will.

These ideas made but little impression on the medical world; they were even forgotten for more than sixty years, when John de Goester, a Dutch anatomist, brought them again to light. He however did not well distinguish irritability from elasticity; the difference between these two forces had not yet been established by demonstrative experiments. Albert von Haller was the first who directed his investigations towards this end, and who, by a series of extremely ingenious experiments, elevated the hypothesis of Glisson to a demonstrated fact. He published in 1747 the result of his immense researches, with the modest title of *Primæ Lineæ Physiologiæ*, a work in which are traced for the first time the true characters which distinguish living tissues from dead substances. The author gives, in it, his opinion on the vital contractility of tissues, which he distinguishes perfectly from contractility or elasticity. He proves that the latter is seen in all the structures, in tendons, in membranes, as well as in muscles, and that it continues for a short time after death; while vital contractility is only found in muscles and becomes extinct with the life. He thinks that the latter proceeds from nervous influence, for the nerves of the spinal marrow being irritated, he says, the muscles, which receive their nerves from these parts, are violently convulsed, even on dead animals. The nerve of a muscle being tied or cut, it relaxes, and cannot in any way

excite vital movement; if the ligature is taken off, it recovers its vital contractility. In fine, the weight that a muscle can elevate during life is sufficient to separate and tear it after death.*

Ten years later, in 1757, Haller published the first volume of his great physiology, with the title of *Elementa Physiologiæ Corporis Humani*, the whole of which was not given to the world till 1766, two years before the death of its author. It was, if I may be permitted the poetical expression, the song of the swan, the crowning labor of an existence entirely consecrated to the profit of science and humanity. Haller proceeded in the entire work with his usual circumspection, advancing nothing but what was supported on well established facts, and giving the least possible influence to hypothesis. Rich in a multitude of observations, which were his own, and in a vast erudition, he elevated to the science of life an imperishable monument. From this time physiology had an existence, independent of physics or chemistry. It was demonstrated that life has its laws and its special forces, which must be studied after a particular method.

These new truths, which were proclaimed by Haller, excited, in a lively manner, the attention of the learned world. On all sides, men hastened to repeat his experiments, and to try new ones, in order to confirm or refute his assertions. The celebrated naturalist, Felix Fontana, was one of the most zealous and able advocates of the doctrine of irritability. Haller, trying to ascertain to what mode of structure muscular contractility was inherent, thought that this vital principle depended upon gelatine, combined with an earthy principle. He remarked, also, that there are stimulants which act on certain organs, but not on others. Antimony, for example, which irritates the stomach, even in small doses, so as to provoke vomiting, does not appear to have any influence on the heart; hence originated the idea of specific irritability.

Theophilus Bordeu applied this idea to the theory of secretions. In his treatise on the position of the glands, and their functions, he combats all the chemical and mechanical explanations with which writers had been satisfied up till that time, and attributes the various sorts of secretions to the proper action of the glands, all of which, he says, have their specific tone and sensibility. He emits a conjecture, which was possibly the point of departure for the researches of Gall, on the philosophy of the brain. He says that all the functions commence at this viscus, which is divided into as many departments as there are organs of the body. The brain communicates its impulse to the organs

* Haller's Elements of Physiology, French translation.

by the intermediation of the nerves; nevertheless, he adds, this matter is very obscure, and it is necessary to multiply experiments, to know the brain, and the uses of its different parts.*

Peter Anthony Fabre, professor in the Faculty at Paris, was the first one to apply the doctrine of irritability to pathology. He refuted the mechanical theory of Boerhave, on inflammation, and proved that this proceeds, not from the obstruction of the capillary vessels, but from the exaltation of their irritability. In his microscopical observations on frogs, he perceived that the blood moves in all directions in the capillary vessels, whence he concluded that in these vessels the motion of the fluids is no longer under the impulse of the heart, but under the influence of irritablity. †

Haller had demonstrated the existence of irritability in the muscular fiber. His disciples assumed it also for other tissues, as we have just seen, but it remained to be proved by experiments, and a severe analysis, that it does exist in all the tissues. It was necessary to show to what degree, and under what circumstances, it manifests itself in each of them; in a word, it was necessary to systematize the theory of vital properties, to extend it to all the functions: this work was undertaken and executed with much genius and boldness, by the celebrated Bichat.

This man, whose career was so short and so complete, commences by tracing clearly the characters that distinguish vital from physical forces. "The one," he says, "varies unceasingly in its intensity, energy, and development, passing often with rapidity from the last degree of prostration to the highest point of exaltation; accumulating and wasting, by turns, in the organs, and assuming under the influence of the slightest causes a thousand various modifications. Sleep, wakefulness, exercise, rest, digestion, hunger, the passions, the action of bodies surrounding the animal, etc.,—all expose them each moment to numerous changes. The others, on the contrary, fixed and invariable, are the source of a series of always uniform phenomena. Compare the vital faculty of feeling with the physical faculty of attraction; you perceive that the attraction is always in proportion to the mass in which it is observed, while sensibility changes constantly its intensity in the same organic part and in the same mass of matter," ‡

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* Bordeu, Recherches Anatomiques sur la Position des Glandes et sur leur Action. Paris, 1751.

† Recherches sur différents Points de Physiologie, de Pathologie et de Thérapeutique. Paris, 1784.

‡ Bichat, Recherches Physioligiques, sur la vie et sur la mort, pre. partie, art. VII., § 1.

Bichat reduced the vital faculties to two species, namely, the faculty of feeling and the faculty of contraction; but in each of these he admits different degrees; thus, sensibility is divided, according to him, into organic and animal. The first consists in the faculty of receiving an impression; it is common to the plant and to the animal; the zoophyte possesses it, as well as the quadruped. The second consists in the faculty of receiving an impression and transmitting it to a common center; animals provided with a nervous system are only endowed with this. As to contractility, Bichat divides it also into organic and animal; accordingly as it is independent of the brain, as in the heart, intestines, secretory organs, etc., or as it is controlled by the will, as in the muscles of locomotion, of the voice, etc.

In a later work the same physiologist admits that the vital properties are susceptible, not only of exaltation and diminution, but also that they may be modified and rendered unnatural; and he bases on this consideration the utility of specific remedies. In fine, he recognizes a species of vitality in the fluids of the animal economy, but he avows, at the same time, his inability to determine in what this vitality consists. "Its existence," he says, "is no less real on that account, and the chemist who analyzes the fluids, has before him only their cadaver, just as the anatomist has but that in the solids which he dissects." *

We must not forget that at this epoch numerous and beautiful researches were already made, by a celebrated surgeon of London, in order to determine the vital properties of one of the most essential liquids in the animal economy. The treatise of John Hunter, *on the Blood and on Inflammation*, had placed beyond question the truth that the blood, while it circulates in a living body, enjoys certain properties which it loses when it issues from the vessels, or when the animal is deprived of life. One of the vital properties of the blood, on which the author insists the most, and which he regards as the principle of most of the phenomena of inflammation, is the aptitude of that fluid to coagulate spontaneously, that is to say, without the addition of any chemical agent. In fine, to the authors whom I have cited as having contributed to the progress of anatomy and physiology, during this period, I must add the names of Winslow, Bernard, Sigefroy, Albinus, the two Alexander Monroes, James Douglass, Vicq d'Azyr, and others.

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* Anatomie Générale, Considerations Générale.

## CHAPTER II.

### HYGIENE.

This branch of Medicine was, during the last historical period, considerably extended. It became the object of meditation, not only of physicians, but also of philosophers and learned men of all classes, and governors and statesmen, who endeavored to ameliorate the condition of the physical life of the nations, and teach them more salutary habits. Considered from the most elevated point of view, hygiene embraces all the objects of nature, and all the productions of art; for there is nothing in the universe which may not be beneficial or injurious to the health of man. But the limits of this work and of our knowledge, force us to confine it to a circle infinitely more restrained. It is customary now-a-days to divide hygiene into two great sections, accordingly as it refers to man living in society, or as an isolated individual. We shall conform to this arrangement.

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#### § I. On Public Hygiene.

We have already seen in the commencement of our history, with what foresight the legislator of the Hebrews mingled with moral precepts a great number of hygienic prescriptions, appropriate to the people, and the climate in which they lived. The first sovereigns of Egypt had given this example, before him. The founders of the Greek cities drew from that source a part of their religious rites, and their hygienic customs, to which they added improvements. Among others, they instituted the gymnasium, and carried the gymnastic art to a degree of perfection that has not been since equaled. Their exercises had not only the purpose of imparting strength, but also grace, suppleness and agility. We know that the athletic temperament was not ranked by them among the good temperaments. In Sparta, where the only object was to make soldiers, the exercises had only the purpose of hardening the body against the fatigues of war.

In Rome, gymnastics took a worse direction still, for it was abandoned to the gladiators and slaves, who alone combatted in the circuses. The baths became, also, under the emperors, objects of luxury and effeminacy rather than salubrity. But the construction of aqueducts, fountains and sewers, the maintenance of cleanliness in cities, the attention to the location of cemeteries without the limits of towns, and the

importance which was attached to the duties of magistrates, all attest that the earliest legislators of that sage people did not neglect the care of public health. Vitruvius, architect to the emperor Augustus, is worthy of being consulted, not only as regards the perfection of edifices, but also in regard to their salubrity. He gives, next to Hippocrates, the best precepts on the location of cities. He recommends that cellars and public granaries be constructed on the northern side, because a southern exposure is unfavorable to the preservation of stores. He tells us that the ancients consulted the livers of animals to judge of the nature of the water of a country, and the salubrity of its alimentary productions; so that the inspection of the entrails of the victims of the priests, instead of appearing to our eyes as a ridicilous superstition, was really a rational means to discover the influence of the waters, airs, and locality, on living beings.

Among modern nations, the Turks, alone, mix with their religious practices some hygienic observances, such as legal ablutions, abstinence from certain aliments, and particularly wine; but this last prohibition, which was designed to protect the sectators of the Koran from the vice of drunkenness, has created among them a custom more fatal still—the the use of opium. The Lent of Mussulmen must not be counted among the number of well ordered hygienic institutions, any more than that of Christians, for the results seem to me contrary to the true aim of hygiene. Doctor Bruyer sets forth, as follows, the effects of the first, upon health: "Knowing," he says, "the repugnance of every Mussulman to be out of his house at night, I made it my pleasure, as far as possible, to avoid being late in my return at the close of the day. But I was most careful during *Ramazan*, a month in which all the faithful take no nutriments from the rising to the setting of the sun—not even a pipe of tobacco, or a cup of coffee, or a drop of water. This fast—always painful to a lodger—is truly intolerable for a laborer, especially when its observance takes place, as I have known it, during the longest days of the year; so to economize their strength, the boatmen row us as slowly as possible. How often have I encountered, at the different quays of Constantinople, those who, fresh and active at the commencement of the fast, were, at its close, so dried up, thin and wrinkled that, without my dragoman, I could not have recognized them."[*]

In the Christian church, which proposes to elevate man to the highest degree of moral perfection, and free him from the bondage of his passions, we must not search for hygienic rules embodied in ecclesiastic

[*] Neuf années à Constantinople. Paris, 1836, T. I, p. 149, chap. I, sixieme excursion.

ordinances, but, owing to the intimate union which exists between hygiene and morals, it often happens that the maxims of the Church are excellent hygienic precepts. As to the European governments of the middle ages, the sole general measures of salubrity of which their history has transmitted to us the account, are the regulations concerning the sequestration of the leprous, and the establishment of free baths for the poor. Also, it must be said that the attention to the cleanliness of these was so badly observed that the baths, themselves, often became a focus for the propagation of contagious diseases. When syphilis took the place of leprosy, a part of the ordinances relative to leprosy were applied to syphilitics, as has been heretofore remarked.

It was but a short time before the beginning of the seventeenth century that the governments of Europe occupied themselves with the state of public health. The lazaretto at Marseilles, was the first establishment founded to prevent the communication of the plague from the East. Wise and strict regulations were promulgated on that occasion, and they have served as a model for all lazarettos founded successively in the other ports of the Mediterranean.

The idea of a lazaretto was first conceived by French merchants who resided at Cairo and Alexandria. These merchants, observing that the Coptic monks, isolated in their convents, seemed to be secure from the pest, confined themselves also to their houses in the times of the epidemic, and communicated with their neighbors only from the windows or from the tops of the terraces that crown most of the edifices in the Orient. The advantages which they reaped from this custom were such, that it is maintained perfectly as a custom to this day. The Frank quarter, in Constantinople, is generally preserved from the plague by a careful sequestration, while the Turks, imbued with the dogma of predestination, neglect all prudent measures, and perish, victims to their blindness.

At present, commerce earnestly protests against the rigor, and especially against the duration of quarantines. The opinion of a majority of physicians is favorable to a reform in this respect, and there are men who go so far as to discredit the utility of these establishments and demand their suppression. Nevertheless, if we compare the small ravages that the plague has made in Christian Europe since their establishment, with the frequency of its invasion before that epoch, it will be difficult to deny the importance and efficacy of these preventive measures. From 1476 to 1649—that is to say, in a space of less than two hundred years—the plague prevailed sixteen times in the city of Marseilles. Now, it was only in the first part of the seventeenth century that any one seriously thought of it as a contagion, and employed any means to prevent it. Up to that time pestilential epidemics had been generally

regarded as a scourge from heaven, whose progress no human barrier could arrest, and no more efforts were made to preserve the people from its ravages than are made among Musselmen. But after 1649, *i. e.* after the establishment of lazarettos and the rigorous observation of sanitary rules, the plague has prevailed but once in Marseilles during the space of nearly two hundred years.* It is possible, and very probable, that in the institution of quarantines, the measure of strict necessity may have been passed, but it does not seem to me logical from this to argue their inutility.†

It would be too long to enumerate all that has been done or undertaken within two centuries to render cities, camps, districts of country, vessels, barracks, workshops, hospitals, prisons, etc., more salubrious. I should be compelled to refer to the works, not only of physicians, but also of chemists, philosophers, magistrates, generals, navigators, etc.; for public hygiene is connected with all the sciences and arts, either to profit by their light or in turn to benefit them by its own, so as to make all converge to the well-being of the people. The abundance of materials, therefore, becomes an obstacle to their just appreciation. How could we discern from among so many writings, discoveries, and improvements, those which merit the preference? It would be impossible for me to avoid omitting some works, worthy as much to be mentioned, and possibly more so, than certain of those of which I should speak. How shall I depict all the efforts attempted in the last centuries by governments, municipal authorities, learned societies in particular, in order to ameliorate the physical condition of man? The enlarging and opening of streets, the draining of stagnant waters, the removal of filth, the relocation of cemeteries and insalubrious manufactories from the centers of population, the draining of marshes, the chemical analysis of the air, drinks, and alimentary substances, so as to determine of their elements those which are advantageous or injurious to health, the research of means proper to preserve food, and the regulations of a sanitary police,—these are some of the objects which have occupied learned men and statesmen.

The Royal Society of Medicine gave a strong impulse to the labors concerning public hygiene, by the questions put in the public concours

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* The plague of 1720 was the last that existed in that city, although it has frequently been met with at its lazaretto, where it was arrested.

† See the Dictionnaire des Scienc. Medicales, art. HYGIENE, by Hallé and Nysten; art. LAZARET, by Fodéré. See also the remarkable and important report made to the Royal Acâdemy of Medicine, on the Plague and Quarantine; Bulletin de l'Académie Royale de Médecine, Paris, 1846, t. XI.

by the reports of its committees, and by the correspondence it maintained with physicians of all countries, who furnished them their observations on epidemics, topography, and in general, on everything that concerned public health. John Howard offered to the world the first example, perhaps, of a man who traveled neither for his own pleasure or health, nor for any advantage or personal interest, but solely for the love of humanity. Hospitals, prisons, and lazarettos, attracted his attention; he devoted his fortune and his existence to the amelioration of the condition of the unfortunate, who were shut up in them. A. A. Parmentier signalized, also, his zeal for the poor, by occupying himself, successfully, in regard to means to increase their alimentation. Thompson, Count Rumford, illustrated and made dear his paternal administration, in Bavaria, by the establishment he founded for the purpose of procuring labor and bread for necessitous classes. Guyton-Morveau proposed excellent means of disinfection, which are still employed in many cases. The health of soldiers and seamen attracted the attention of many observers, and gave rise to numerous publications, among which we distinguish those of Rouppe, Lind, Poissonnier des Perrieres, Pringle, Donald Monro, Van Swieten, Colombier, Gilbert and Desgenettes.

But of all the conquests which public hygiene has made in these latter times, there is one which merits a special mention. Variola prevailed, periodically, in both worlds; it took from the population of Europe an annual tribute which is estimated to have amounted to not less than four hundred thousand souls, and mutilated and disfigured nearly as many more. A woman of great spirit and character, Lady Wortley Montague, had, indeed, imported from Constantinople the practice of inoculation, which has much merit, but is not free from reproach, because it exposes its subjects to almost as much danger as the spontaneous contagion.

A physician of Barkley, a city of the county of Gloucester, having heard it said, or having remarked, that the disease known in the western provinces of England under the name of cow-pox, was communicated to those who kept or milked cows habitually, and that this affection, which was very slight, protected completely those who had passed through it, from the variolic affection, meditated on this strange fact, verified it, and conceived the happy idea of inoculating children, directly, with the virus taken from the udder of the cow. At the end of three, four, or five days, he saw pustules developed, at all the points of the skin which he had pricked, similar to those of cow-pox; then the pustules broke, the pus dried and formed a small crust, which in falling left a cicatrice. Besides, there was little or no fever, the children continuing

to eat and play as usual without realizing any bad symptoms. Not one of those children was ever attacked by variola.

Jenner, after having repeated his experiments for a number of years, and being assured of the inocuous character of the virus, and its prophylactic virtue, convinced, finally, of the reality and grandeur of his discovery, decided to make it public, and consigned all the details of the subject to a volume printed at London, in the year 1798.* Great was the stupefaction in the medical world at the announcement of such an astonishing marvel. It seemed impossible to imagine that a pest as ancient and as formidable as variola, could be expelled forever by a process so simple and benign as vaccination. The discovery of Jenner met, at first, with much opposition. The incredulous raised against it many objections of every kind, and it gave rise to a very spirited polemic between its defenders and opponents; but I shall not retrace the phases of this contest now terminated, and whose ultimate result has been the adoption of the new specific, in every country into which European civilization has penetrated. I will only observe that after the victory, there was a disposition to contest with Jenner the honors of his triumph; some ambiguous passages from old books were uncovered from the dust of libraries, and certain popular traditions were recalled, that had prevailed in some obscure province, to find in them the germ of the admirable discovery of the English physician, as if all ideas, all new inventions, are not the consequences of some anterior idea or invention! But even this does not diminish the glory of the discoverer, for the development given by him to those ancient ideas is great in itself, and eminently useful in its results. Now when I consider the sagacity, patience, and exquisite judgment of which Jenner gave proof in his long experiments, when I consider the immense benefit of his discovery, I no longer discuss his genius, I have language only to praise and bless him!

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### § II. Private Hygiene.

Among the original and important writings with which this department of hygiene was enriched during this period, I will cite, in the first place, that of Sanctorius, entitled, *Aphorisms on Static Medicine.* It was composed under the following circumstances: Being desirous to estimate the quantity of insensible humor that was exhaled each day from the human body, and to determine the relations which connect this function with the various actions of the different states of the economy, such as digestion, exercise, repose, health, disease, age, season, etc., this physician

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* Jenner, An Inquiry into the Causes and Effects of the Variolæ Vaccinæ. London, 1798.

had the idea of arranging a seat on the platform of a balance, in such a way as to be able to take the weight of the body at every hour of the day, if he desired it, both before and after sleep, meals, the emission of urine and feces, in a word, before and after each function whose operation is important to life. He continued, for thirty years, his daily experiments; then he consigned the general results which he had obtained, in a small collection of aphoristic sentences, of which the following are specimens:

"All diseases proceed from an excess or defect of transpiration. If a physician who has the care of a man's health, has regard only to the nutrition and sensible evacuations, without knowing how much transpires each day from those who are confided to him, he is ignorant of their true condition, and is unworthy of the title of doctor in Medicine."*

"To evacuate very much by stools, urine, or sweat, and but little by transpiration, shows a state of disease."†

"Why is swooning of great utility in high fevers? Because it disposes the body to sweat freely."‡

"A man in health loses in a day, by transpiration, as much as he passes in fifteen days by the bowels, though he have a stool of perfect fecal matter every day."§

"If a person drinks to excess during the night, and the body returns, neither by coction nor indigestion, the next day, to its natural state, the following verses are applicable to his state:

Si l'on est malade au matin,
D'avoir passé la nuit à hoire,
Il faut envoyer chez Grégoire,
Et se guérir avec du vin."‖

If you find yourself sick in the morning,
Having passed the night in debauch,
The wine of Gregory will cure you,
Send quickly to him for a draught.

"He who sleeps transpires double as much as when he is awake. Hence the following axiom: Two hours rest when awake, are not worth much more than one hour of sleep."**

The publication of Sanctorius was hailed as a revelation from the god of Medicine, a true code of hygienic laws. Their author was saluted with the title of second Hippocrates, and his sanatory maxims put on a level, or above those of the old man of Cos. His salary as professor in the University of Padua, was continued to him by a decree

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*1st section, Aphor. 2d, translation of Lebreton. Paris, 1722.
†*Ibid.* Aphor. 14. ‡Aphor. 98. §Sec. 3d Aph. 10. ‖Aph. 78. **4th sec., Aph. 18.

of the Senate, and Venice, where he finished his days, in 1636, erected a statute to his memory.

Nevertheless, if we submit to a severe critic the work of Sanctorius, we find it reprehensible in several respects. In the first place his conclusions are too general and too absolute, for from experiments made upon one individual in one climate, he makes inductions for every body and for all climates. In the second place, several inevitable causes of error entered into his calculations, among others, the two following: he took no account of the pulmonary exhalation and absorption, nor of cutaneous absorption. In fine, several observers have repeated in various countries the experiments of Sanctorius, and all obtained extremely variable results. From this it appears that there is nothing more changeable than cutaneous transpiration, and that to determine its quantity would be as impossible, says Bichat, as to pretend to specify the volumes of water that are vaporised each hour, by a heat whose intensity varies each moment. The only general conclusion which may be drawn from these numerous experiments is, that in a state of health this excretion is ordinarily very abundant—that it is less when we are awake, and that in every case it merits the attention of the physician as well as the physiologist. If then these aphorisms of Static medicine do not justify the enthusiasm which their appearance excited, they do no more merit the neglect into which they have fallen in our days. H. Boerhaave, whose judgment has had justly much weight, says that no other book in medicine has been written with so much care, and Lorry has added to it commentaries worthy of being meditated upon in all time to come.*

Cheyney, a physician in London, had very much impaired his health by excess of pleasure and good living. He became excessively corpulent, and suffered all the inconveniences of that state, such as dyspepsia, lethargy, indolence and other evils. He devoted several years to the care of his health, and had the happiness to re-establish it perfectly, by means of a country-life, milk and vegetable diet, exercise

* De Medicina Statica, Aphorismi, Parisiis, 1770, 12mo. Sanctorius has estimated the quantity of transpiration, compared with that of the urine and feces taken together, in the proportion of 5 to 3. Denis Dodard a physician in Paris, found that the transpiration is to all other excretions as 12 is to 15. Sauvages, in the south of France, and Gorter in Holland, obtained results similar to the latter. James Keill, who experimented in England, assumes that the quantity of urine surpasses that of the transpiration at the rate of 38 to 31. Linning, who observed this matter in South Carolina, says, that the transpiration exceeds the urine for five months of the year, and that the opposite occurs during the other seven months. We see therefore that there are as various results as there are observers, which makes the reflection of Bichat entirely true.

and the Bath waters; so that he was enabled to resume his very active occupation and continue in it, to the close of his life which took place at the age of seventy-two. Cheyney enjoyed a great reputation as a practitioner. He has left several works, of which the most estimable is a monograph on the art of preserving health and prolonging the lives of valetudinarians. He gives in it precepts which are still profitably read. He exalts above all, the regimen suited to his condition, as did Carnaro, whose history we have already given.

Among the other writings which contributed to improve hygiene during the last century, I will cite the following monographs: that of J. B. Fisher, and of M. J. Roberts, on Old Age and its Diseases; that of Ramazini, on the Diseases of Artisans, which Fourcroy enriched by interesting notes; the writings of Lorry, Juncker, Bebdoes, J. Arbuthnot, Hallé; those of Tissot, which have enjoyed so much popularity; in fine, the general treatises of Tourtelle, Moreau de la Sarthe; the Treatise on Medical Police, by J. P. Frank; the Code of Health, by John Sinclair, etc.*

## CHAPTER III.

### GENERAL PATHOLOGY.

Pathology was studied, during this period, under various aspects, which we shall here content ourselves with indicating, very summarily; but will speak of it much more explicitly in other places, particularly in the chapters devoted to the exposition of theories and systems. Some gave the principal credit to humors, in the generation of diseases, conformably to the modified Galenic doctrine, or followed the principles of the new chemistry; others saw in every morbid disorder only an error or trouble in the governing principle of the economy, which they named archeus, soul, nature, or vital principle; others considered diseases as a mechanical or dynamical derangement of the action of the solids; others, in fine, banished from pathology the consideration of the causes and phenomena which were not manifest to the senses, and insisted on the results to be obtained from pure observations only. From these different modes of regarding diseases, there followed very different pathological classifications, and, in definitive, a more profound and complete knowledge of the morbid state.

* A new edition of the Traité des Maladies des Artisans, with considerable additions, was published by Doctor Ph. Patissier. Paris, 1822, 8vo.

# CHAPTER IV.

## INTERNAL PATHOLOGY.

### § I. Semeiotics.

A great number of physicians devoted themselves, during this period, to the study of symptoms, abstractly considered, and endeavored to establish more precisely their value. They were persuaded that each symptom has its own signification, independent of the concourse of other accidents, and they strove to determine that signification. We have seen Sanctorius seeking the indications of good and bad health, in the variable quantity of insensible perspiration which exhales from our bodies at different hours of the day. Others flattered themselves to be able to find, in modifications of the pulse, signs more certain, concerning the seat of diseases, their cause, gravity, and probable issue.

A Spaniard, named Solano de Luque, was the first who, devoting himself to these researches, studied the pulse. He studied medicine at Cordova, under Joseph de Pablo. During his studies he observed the dicrotic or rebounding pulse, so called when two rapid pulsations are felt, followed by a short pause. Astonished at this phenomenon, he asked his master what interior condition of the body agreed with that sort of pulse, and he received the odd reply, that all these insignificant modifications are produced by the sooty vapors contained in the arteries. The student, but little satisfied with such an explanation, redoubled his care in researches, and came to the conclusion, that the dicrotic pulse is a constant indication of epistaxis.

He observed, also, that a modification no less remarkable, in the pulse, usually precedes a critical sweat. This modification is a first pulsation, followed by three others, which increase to the last, somewhat like the billows of the sea that roll upon the shore; then commences another series of four pulsations, of which the first is always the feeblest, and which gradually augment in force. He named this pulse the *inciduus*, because the fourth pulsation, which is the strongest of the series, is succeeded by the first or the feeblest pulsation of the following series, so that the pulse seems to fall in passing from one quartenary series to another. Besides, it is ordinarily compressible, soft, and in that case it announces, as we have remarked, a sweat; but if it exhibits itself accompanied with very much hardness, it is the precursor of jaundice.

The intermittent pulse is that in which a certain number of pulsations are observed, followed by a longer interval than is usual. According

to Solano, this kind of pulse habitually announces a critical diarrhea. If it is soft, also, it indicates abundant urine; if, on the contrary, it is hard, we may expect vomiting. These are the only species of pulse on which Solano made his observations. He consigned them to a large folio, where they are, as it were, drowned in the midst of an ocean of subtilties. They produced no sensation in the Medical world until they were drawn from obscurity by an English physician, James Nihell, who gave a summary of them, to which were added the results of his own experience.

Sphygmics acquired a very different importance from the researches of Theophilus Bordeu. This observer, whose sagacity we have already appreciated, undertook to connect all shades of health and disease to certain variations of the pulse. He took, in the first place, the pulse of a good-conditioned adult, for a type of a natural and perfect pulse, the character of which he traced as follows: "This pulse is regular, and ts pulsations are perfectly identical, and occur at equal intervals. It is soft, supple, free, neither frequent nor slow—vigorous without being laborious."*

Taking this as a type, the author points out an incredible number of species and varieties, which are more or less removed from each other. He distinguishes, for example, a particular pulse for each organ; among others, he has a nasal, gutteral, pectoral, stomachal, intestinal, hepatic, splenic, renal, menstrual pulse, etc. He allows a specific difference between the pulse of organs situated above, and those situated below the diaphragm, and another between those of the right and left half of the body. Then he gives, also, the infinite varieties of the pulse produced by the passions and diseases, as well as by certain medicines.

We shall not attempt to follow this author into the labyrinth of distinctions, more subtile than real, into which he enters. If it were true that each physiological, pathological, and even psychical act is revealed by the different shades in the pulse, what tact, sufficiently exercised or refined, would be able to seize these shades, often as imperceptible and instantaneous as those of thought? What light could be obtained from the extremely delicate and fugitive variations of the pulse, when its most remarkable permanent modifications have only an equivocal signification, and are connected with very varied states of the health? Thus the intermittence of pulsation is sometimes a symptom of no importance, while at other times it is one of the most grave. Analysis, as a method of research, has been very much and properly praised in our times, but every method has its faults, and we shall have, on more

* Bordeu, Recherches sur le pouls par rapport au crises, chap. III.

than one occasion, to observe that analysis, pushed to its utmost limits, degenerates into deceptive subtilties. A great number of physicians repeated the observations of Bordeu, either to confirm or amend his doctrine, and their united labors carried sphygmics, toward the middle of the last century, to a very high degree of perfection. At the same epoch, a modest German practitioner gave to semeiotics a new means of investigation, destined to acquire, at a later period, a major importance. Leopold Avenbrugger published at Vienna, in 1761, the result of his experience, with the title of *New Method to Recognise Internal Diseases of the Chest, by the Percussion of that Cavity.** This discovery was not much noticed, even in Germany, though Stoll employed it and eulogised it. Sprengel, who wrote his history toward the close of the last century, speaks of it as follows: "I must also mention another sign, which was discovered by Leopold Avenbrugger, and which he asserts to be the most important of all those that compose semeiotic pathology; it is the sound which the chest gives when it is struck. It is impossible to deny that the thorax, struck with the palm of the hand, resounds differently when the lungs are free and sound, than when they are adherent, engorged, or ulcerated. Avenbrugger has developed, very well, this fact, in a particular treatise; but he does it with a little too much subtilty, for it is scarcely credible that he could have recognised the various diseases of the lungs and chest by the sole percussion of that cavity. Nevertheless, his observations merit to be read, and they have been, in part, confirmed by Isenflamm.†

The work of Avenbrugger was translated into French by Rosiere de la Chassagne; but his method of exploration was almost unknown in France until it had been vulgarised by the lectures, translations and learned commentaries of Corvisart.‡ We shall see it in the end receive an extraordinary extension and perfection by the addition of another proceedure not less ingenious, designated by the name of *auscultation.*

We find in the Hippocratic books a proceedure which has some relation to percussion. It consists in giving the shoulders of the patient a shake, by means of which the sound of a liquid effused into the thoracic cavity may be heard. This gross proceeding, termed *succussion*, appears to have been abandoned by the successors of the Asclepiadæ, because of its uncertainty and the great inconvenience of its employment.

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* Inventur novum ex percussione thoracis humani ut signo abstrusos interni pectoris morbos detegendi. Vienne, 1761.

† Hist. de la Med., sec. xv., cap iii., art. v.

‡ See translation of Avenbrugger's work, from Latin into French by Corvisart. Paris, 1808.

## § II. Pathological Anatomy.

Pathological Anatomy, which was created towards the middle of the preceding period, rapidly grew, and formed very soon a considerable branch of pathology. From the beginning of the seventeenth century a great number of physicians devoted themselves, assiduously, to necroscopy, and by their labors a considerable quantity of materials was collected. Among the collections of the necroscopic observations of this epoch, we distinguish those of Thomas Bartholin, Nicholas Tulpius, Dominic Panaroli, John James Wepfer, Frederick Ruysch, John Conrad Peyer and Stephen Blancaerd. These materials were capable of shedding a bright light on the seat and nature of a certain number of diseases; but they were lost in a multitude of volumes. In order to become beneficial to science it was necessary to collect, examine, and classify them, according to their analogies, to deduce from them the consequences relative to the diagnosis of diseases, and the practice of medicine;—an immense task, which did not, however, check the patient zeal of Theophilus Bonet.

This writer did not dissimulate the difficulties of his project, nor the numerous causes of imperfection, inherent to a first effort of the kind. He appreciates them, on the contrary, with very great justness, when he says: "this work has cost me as much fatigue and care as the reader will draw advantage from it; for I hazard myself without a guide on an unknown path, where there is no perceptible trace of man: I tread with fear this long, rude and difficult path. I know, he continues, how far I shall fall short of my aim; but I hope that I shall receive thanks for having taken the first step in a career so eminently useful.*

Bonet divides his general repertory of pathological anatomy into four books. In the first he collects all the diseases of the head: in the second those of the chest; in the third those of the abdominal organs: lastly, the fourth contains observations relative to diseases whose seat is unknown, or which may attack indifferently all parts of the body, such as fevers, gout, syphilis, tumors, wounds, etc.

To give an idea of the quantity of matter contained in this work, I shall only cite one example. The eighth section of the second book is devoted to the exposition of the causes of the palpitations and pains of the heart. The following is an enumeration of these causes according to necroscopic observations reported in this chapter: a tubercle, an abscess, excessive heat, sanguineous plethora occasioning obstruction, worms, sudden evacuation, pregnancy, inflammation, a pouch filled with

* Sepulchretum sive anatomia Practica. Genevæ, 1700.

water or some putrid liquid, a miasmatic infection whether from the exterior or interior, and certain unnatural adhesions. These causes exist sometimes in the cavities, or in the substance even of the heart, or in the pericardium, or in the arteries; again, they are in more distant parts, as the uterus, liver, spleen, or stomach. For each of these cases the author reports one or several clinical observations, accompanied with the opening of the corpse. There are at least forty, relating to pains and palpitations of the heart.

These observations have been complained of for their want of sufficient detail; some of them for not being sufficiently authentic, and others yet for presenting, as causes of diseases, certain results occurring after death. These reproaches are well founded, and it must be agreed that this enormous compilation shone more for the labor and patience of its preparation, than for its invention and method; but such as it is, it constitutes, nevertheless, an era in the history of pathological anatomy—it served as a point of departure for ulterior researches, and principally for those of which the immortal Morgagni published the results, nearly a century later.

The latter indeed did not propose, in composing his anatomo-pathological letters, more than to amend, and reconstruct in some sort, the work of Theophilus Bonet. Profiting by the riches which the science had acquired in this interval, and especially by those which his master Valsalva had collected; joining to a very extensive erudition a severely critical habit, he established order and clearness where the author of the *Sepulchretum* had left obscurity and confusion reigning. He showed himself original, without making any pretension to it; in contrast with so many others who make much pretension, without doing any thing of value. He does not disguise what he borrows from others, either dead or living; but what is his own, is the choice and judicious employment of materials, and his wise and luminous discussion of facts. Persuaded that medical science cannot go forward except in the light of observation, he avoids scrupulously, turning aside into the vagueness of interpretations, so that no one could apply to him that remark of Homer, which he himself recalls in his preface, "he has told many lies in speaking of probabilities." Odyss. lib. XIX.

The following selection will show his wise and circumspect manner of discussion: "The great Senac, it is said in the twenty-third letter, denies the absence of the pericardium; on the other hand, he confirms by multiplied observations, its adhesion to the heart; but he teaches the nature of this adhesion, and its locality when it causes or prevents palpitations. Nor does he any more conceal how much care must be taken, when it occurs at the same time with other causes, if, above all, they

are grave, not to attribute hastily the palpitation to adhesion; and he asserts, in general, that when several causes are united at once, the particular effect of each cannot be distinguished, and even then, all united can produce certain phenomena to which no one in particular could give rise."*

The work of Morgagni appeared in 1762. From that time to the end of the eighteenth century, a great number of physicians occupied themselves with anatomo-pathological researches, and added new observations to those already known. Among these I must cite, more particularly, Th. Walter, P. Barrere, Santorini, Edward Sandifort, Andrew Bonn, G. Hunter, John Ernest Greding, John Baptiste Palletta, Joseph Lieutaud, Anthony Portal, and, above all, Xavier Bichat, who, uniting to a genius eminently generalising, an admirable talent for analysis and observation, shed, not only on pathological anatomy, but on the whole of pathology, a clear light, whose rays have directed the labors of most of his successors. The idea of separating the human body into elementary tissues, which present, in all parts where they are found, the same properties, and are subject to the same alterations, was a mother idea, which has now for fifty years served as the basis of the researches of all pathologists. Bichat comprehended well all these results, and he presents them clearly and justly:

"Chemistry," he says, "has its simple bodies; these, by the various combinations of which they are susceptible, form compound bodies; such are caloric, light, hydrogen, oxygen, carbon, azote, etc. So, also, anatomy has its simple tissues, which by their combination—four to four, six to six, eight to eight, etc.—form the organs. These tissues are: first, the cellular; second, the nervous system of animal life; third, the nervous system of organic life; fourth, the arterial system, etc. Here are seen the veritable organised elements of our parts. Wherever they are met with, their nature is constantly the same, just as, in chemistry, the simple bodies do not vary, whatever may be the compound into which they enter.

"The idea, too, of considering thus abstractly the different tissues of our organs, is not an imaginary conception, it rests on real foundations, and I believe will have a powerful influence on physiology and medical practice. In fact, from whatever point of view these tissues are studied, they do not at all resemble each other. It is nature, and not science, which has drawn the line of demarkation between them." †

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* Twenty-third Lettre Anat.-Med., translated by Doctor Destonet. Paris, 1820.

† Anatomie Generale, edition of Beclard and Blandin.—Paris, 1831. Compare J. Henle, Traite d'Anatomie Generale, translated by J. L. Jourdan.—Paris, 1843.

A little farther on he adds: "I divide pathological anatomy into two great parts. The first includes the history of the alterations common to each system, whatever may be the organ or region in which this structure is found. It is necessary to show, in the first place, the various alterations of cellular, arterial, venous, osseous, nervous, muscular, and other tissues; to examine the mode of inflammation, suppuration, gangrene, etc., proper to each of them; to speak of the various tumors of which they are susceptible, the changes in structure which they realise, etc. After having thus indicated the alterations proper to each system, in whatever organ they are found, it is necessary to resume the examination of the diseases appertaining to each region—to examine those of the head, the chest, the abdomen, and the members following their ordinary course. This progress is incontestibly the most natural, although, as in all the divisions by which man tries to bring nature within his conceptions, there are many points to which they do not apply."

We thus see that in setting forth the advantages of the innovations which he proposes, Bichat neither disguises the difficulties nor the abuses to which it may lead. "Do not exagerate," he said, previously, "this independent relation which the tissues of an organ hold to each other in regard to diseases; practice would contradict us. We now often see that the cellular tissue is the means of communication, not only between two tissues of the same organ, but also between different organs. Thus, in many chronic diseases, are the tissues of the same organ gradually altered, and, at the opening of the body, the totality of the organ appears to be affected, although a single tissue was originally diseased. In cancer of the breast a small tumor is moveable, at first, under the finger; in the end the whole glandular, cellular, and even cutaneous tissues, are confounded in a common and cancerous mass. The cancer of the stomach, intestines, etc., presents the same condition."* I have permitted myself to quote thus much on these points, because it shows the true route pathological anatomy must follow, and because it proves, at the same time, that this branch of the science can not be separated from clinical observation without losing much of its importance and utility.

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### § III. Nosography.

It is impossible to construct a descriptive table of all diseases, or even of a small number, without adopting some order—some species of

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* Anatomie Générale, § vii.

nosological classification. We have shown that the outlines of such a plan are to be seen in the works of the Asclepiadæ. In that collection, diseases are sometimes divided into sporadic, epidemic, and endemic, and sometimes into acute and chronic; but the authors who first made these divisions did not adhere to them strictly, at least from what we may judge from the fragments that form the Hippocratic collection. It was only after the foundation of the school at Alexandria, and as the result of the influence of the Peripatecian philosophy, that the savans in general, and physicians in particular, devoted themselves to arranging, in a more systematic manner, the subjects they had to treat.

The order most generally adopted by the ancient nosographers, was called the anatomical, and consists in classifying diseases according to the portions of the body affected. Thus, it was customary to divide all the morbid affections into internal or external, or which follows the same plan, into medical and chirurgical—a bad distribution, which every one blames, but which exists still in most of the treatises, and we have consequently been obliged to preserve it. Then, internal diseases were divided into general and special. The first class comprised diseases which seem to affect the whole system, not having any particular seat, such as essential fevers, gout, syphilis, poisons, etc. The second class comprised affections whose seat is in one of the three splanchnic cavities, the head, chest, or abdomen. There exists still another classification, famous in antiquity—that of the Methodists, which we have explained at length, and which we will, therefore, not repeat. Lastly, some authors have divided diseases according to the age, sex, climate, etc., but their divisions have only been adopted in special treatises, and for particular views, with which, at present, we can not occupy ourselves. It will be only required here to give such classifications as were adopted in the general treatises, embracing the totality, or greater part of known diseases.

We have said a word on the classification proposed by Felix Plater, at the end of the sixteenth century. It does not appear that it exercised a great influence, for we see a long time after, such medical authors as Sennet, Riviere, Morgagni, and others, follow the old method. Nevertheless, toward the close of the seventeenth century, an illustrious practitioner of England, Thomas Sydenham, expressed a desire to see composed a history of diseases, which would be free from all hypothesis, in which the sole effort should be made to trace with exactness the sensible phenomena, and to distinguish the morbid species by their essential and constant symptoms. At that epoch, all the branches of natural history had gained high ground, and acquired a precision till that time unknown, thanks to the perfection of systematic classifications introduced

into science. The naturalists had attained such skill as to distribute all beings which were the objects of their study, into classes, orders, genera, and species, separated from each other by well-marked and invariable characters, by means of which, it was easy to distinguish the different species, notwithstanding their multitude. Medical men flattered themselves, that if they employed an analogous method, they would be able to diagnosticate diseases with the same precision and certainty, as a botanist recognises and names a vegetable.

Boissier Sauvages, a physician of Montpelier, scarcely twenty-four years of age, conceived a plan of nosography formed on this model. He conferred with the great Boerhaave, who approved of it, without concealing from him, however, the extreme difficulties of its execution. But the young man, more emboldened by such suffrage than frightened by the obstacles which were presented, pursued his project, and a few years after, in 1732, he published a first rough draft, with the title of "New Classes of Diseases, arranged in an order similar to those of the Botanist." This essay produced only a moderate sensation; but thirty years later, when the author published the same work, with the title of Nosologie Methodique, but entirely remodeled, and considerably augmented, the attention of all Europe was keenly excited. The renown of Sauvages, already great, was carried to its height, and what proves best the extraordinary vogue, as well as esteem, which the Nosologie Methodique enjoyed, is, that the learned Linnæus used no other work in his course at the University of Upsal, for the space of twenty years.

Whatever may be the discredit into which has now fallen that species of composition, the Nosologie Methodique of Sauvages will always be worthy of the regard of whoever loves to follow the march and development of a science as difficult as pathology. Besides that, it offers, as the first link of a series of interesting productions, the most complete collection of diseases described up to that time, and of observations collected from all parts. I will now give an extract from it; according to Chaussiér, Pinel, and Bricheteau.*

Diseases were divided by Sauvages into ten classes, forty-four orders, three hundred and fifteen genera, and nearly two thousand four hundred species.

1st Class. *Imperfections,* (Vices); Superficial or cutaneous affections, the most of which are susceptible of being cured by local and mechanical means.

2d Class. *Fevers;* Commencing with shivering, followed by heat

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* Dictionaire des Sciences Médicales, at the word Nosography; also the Table des Méthodes Nosologiques, of Chaussier.

and sweat, with a frequent pulse, general pains, feebleness, prostration, and oppression of the forces.

3d Class. *Inflammations;* Local phlegmasia with symptomatic fever.

4th Class. *Spasms;* Convulsive diseases, permanent or periodical contraction of the muscles of locomotion.

5th Class. *Anhelations;* Difficult respiration, spasm of the chest, without acute fever.

6th Class. *Debility;* Inability to feel distinctly, to act or execute the movements or functions with the accustomed energy.

7th Class. *Pains;* General or local, uneasiness, not caused by phlegmasias.

8th Class. *Vesania,* or *Insanity;* Lesions, more or less profound, of the faculties of the mind.

9th Class. *Flux;* Accidental excretion, more or less considerable, of fluids variously colored.

10th Class. *Cachexias;* Depravation or alteration in the form, color, and volume of parts.

Notwithstanding the veneration that Sauvages professed for Sydenham, whom he names the glory of England, and the Light of our Art, he has not strictly followed the counsel given by that physician, to write the history of diseases without mingling with it any theoretic explanation or hypothesis. The theory which Sauvages wished to establish was a mixture of the ideas of Boerhaave with those of Stahl, of which we shall speak hereafter. What I wish to remark at this time is, the inclination of medical writers to decry, in the outset, all theories, to demonstrate their falsity and danger, and immediately propose one of their own, as being alone founded in reason.

"There has not existed," says Sauvages, "up to the present, any connection between theory and practice; the latter is acquired by tradition, and no one has confidence enough in his theoretical principles to follow them blindly, when the life of a man is at stake. The three principal laws of nosology, dictated by wisdom itself, are: First, make an exact and purely historical division of the species and genera of diseases; second, distinguish philosophic theory or hypothesis from history; third, establish the characters of diseases, on their constant symptoms.*

A little further on, after having shown the difference that exists between the philosophic knowledge, which he names also etiology, and the purely historical and descriptive knowledge, he gives the preference to the first, in these terms: "Philosophic knowledge aids the historical, opens the way to mathematical knowledge, and fills the mind with

* Nosol. Method.

agreeable sensations. Happy he who understands the origin of things! Philosophic nosology, therefore, is useful to physicians, and preferable to the historic. It distinguishes the Dogmatists from the Empirics, with whom all science consists in the historic knowledge of diseases. But where philosophic nosology is erroneous, and founded on false principles, we must give preference to simple historic nosology; for it is much better to have no etiology than to accept a false one, which would only serve to lead physicians into grievous errors."*

How strange, that, after having so clearly set forth the temerity there is in engaging in a search for the proximate causes of diseases, this author yet dares adventure in the pursuit of this chimera! Such is, nevertheless, the inconsistency of Sauvages, and of nearly every writer in Medicine. Whatever there is of interest, to-day, in the work of the first of nosologists (and there is much) it is certainly not applicable to the department of etiology, which has so much changed since his time; but much rather to the descriptive part, which has but slightly changed, notwithstanding the progress of science.

When the enthusiasm and astonishment excited by the novelty of this production, were somewhat cooled down, criticism had its turn. It was shown that the genera and species were too greatly multiplied, throwing diagnosis into confusion, and so much the more, as they were not always separated from each other, by symptoms sufficiently well defined and constant. Other faults were also pointed out, more or less real. Then a great number of physicians exerted themselves to trace other nosological classifications, which they believed to be more perfect, because they had not yet submitted them to criticism. Each professor was anxious to have his own, and to attach to it his name; but as the greater number of these productions only differed from each other in a few variations, I shall dispense with reporting them; and, I therefore, pass at once to that of Cullen, which appeared in 1772, and which constitutes a veritable progress.

The nosology of William Cullen, professor in the University of Edinburgh, embraces four classes; nineteen orders; two hundred and thirty genera; and, less than six hundred species:

1st class. *Pyrexiæ:* Frequent pulse, shivering, augmentation of heat, debility of the animal functions.

2nd class. *Neuroses:* Nervous affections, lesions of sensation and motion, without pyrexia, or local disease.

3rd class. *Cachexiæ:* Depravation of the natural state of the

* Nosol. Method.

system, or of a considerable portion of it; without primitive pyrexiæ or neuroses.

4th class. *Locales:* Affections of a part of the body, the organic affections of authors. This last is, according to the framer, the most irregular of all, and purely surgical.

In this classification, as we see, the orders, genera and species, are considerably reduced; they are besides, distinguished from each other by characters better defined and less variable. It presents, then, a real improvement on that of Sauvages; it also obtained a universal vogue, which it maintained till the publication of the Nosographie Philosophique, of Ph. Pinel, in 1798.

This eclipsed all others, and became classic throughout Europe. Six successive editions, in the space of twenty years, shows the confidence it enjoyed. During this long period, it underwent some revisals, of which I shall say but little, because it belongs to the history of the nineteenth century, and I shall, therefore, refer to the first edition only.

All the preceding nosologists had embraced, in their classifications, internal and external diseases; but they included the last for mere form only, and gave them but a very succinct and very insufficient description, to which the Surgeons paid no attention. Pinel did not follow this plan, and was unwilling to comprise, in his classification, only the internal affections or those from internal causes, though he does not dissimulate how vague and inexact the line of demarkation is, which is pretended to be drawn between diseases from an internal or external cause. He avows, that there exist numerous intermediary species which may be called medico-chirurgical, the position of which it is excessively difficult, if not impossible, to determine. Notwithstanding these defects, he believed it right to preserve the division of pathology into internal and external.

Consequently, he divided diseases which he regarded as internal, into six classes, twenty-one orders, and eighty-four genera, as follows:

1st class—*Fevers:* Frequent pulse, increase of heat, lesions in most of the pulsations, fixed duration, etc.

2d class—*Phlegmasiæ:* Local pain, heat, and redness, with or without the febrile state, terminating by resolution, suppuration, gangrene, or induration.

3d class—*Active Hemorrhages:* Effusions of blood from the surface of mucous membranes, and other tissues.

4th class—*Neuroses:* Lesions of sensation and motion, without inflammation or alteration of structure.

5th class—*Diseases of the Lymphatic and Dermoid Systems.*

6th class—*Undetermined Diseases:* Comprising the genera which are not enough related to each other to form general orders.*

The historian Kurt Sprengel, who wrote at the commencement of the nineteenth century, speaks of the *Philosophic Nosography*, and its author, in the following terms: "Faithful to nature and experience, like Hippocrates, whom he took constantly for a model, and cultivated by the profound study of the best medical works published in all time, Pinel ranks among the most skillful and learned physicians of our day. His book is a veritable *chef d'œuvre*, both on account of the excellent plan he has adopted, and by reason of the depth and impartiality of his judgment."

The Nosography of Pinel offers numerous differences to that of Cullen, of which the following are the most important: The Scotch nosologist has united in the same class, under the head of pyrexiæ, fevers, inflammations, and hemorrhage, while the French nosographer has divided these affections into three classes. The first distinguishes fevers either after their type or proximate cause; the second considers the totality of their symptoms, and the organs which they seem principally to affect. Consequently he admits an order of angiotenic or inflammatory fevers, which he believes derived from the primitive excitation of the organic forces of the vascular system—an order of meningo-gastric or bilious fevers, proceeding from a primitive affection of the membranous system of the *primæ viæ*, etc. In regard to phlegmasia and hemorrhage, Pinel distinguishes them, also, according to the tissues where they are seated. This was an important innovation and happy thought, which has been made more fruitful, as before said, by the genius of Bichat, in his Anatomie Générale, and has shed upon pathology a clear light, and introduced a new order of things.

Among the nosologists who appeared before the close of the eighteenth century, and of whom we have not yet made account, we shall cite, as a memoir only, and following their chronological order, first, the classification of Linnæus, which closely resembles that of Sauvages, and was published twenty years later; second, the *Prælectiones de Cognoscendis et Curandis Morbis Præcipius corporis Humani Affectibus*, of R. A. Vogel, professor at Göttingen; third, the classification proposed by David Macbride, an Irish physician, in his Methodic Introduction to the Theory and Practice of Medicine; fourth, that of Melchior Sagar, based almost entirely on that of Sauvages; fifth, the Nosological Table of Louis Vitet, which may be found in his Treatise on Materia Medica;

* In the sixth edition, these two classes have been reduced to one, under the title of *Organic Lesions.*

sixth, that of Erasmus Darwin, published under the title of Zoonomia, and remarkable for its originality, and the poetical imagination of its author, much more than for its severity of analysis and exactness of observation; seventh, and lastly, the essay of a general classification of diseases, presented by Selle at the end of his *Pyréthologie Methodique;* an essay which does not respond to the reputation of its author, and which he did not finish.

Sauvages after having examined at length, in his Prolegomena, what should be the basis of a good nosology, concluded with Sydenham, that it should be based only upon the *constant phenomena and sensible characters of diseases.* Nevertheless he did not unite example to precept, as we have before said, for he does not fail to seek the principles or causes which constitute the essence of each disease. Let us see, for example, what he says on the subject of fevers: "the cause of fever is the distribution of the nervous fluid or forces, greater in the nerves of the heart, than in the nerves of the members. This unequal distribution is made to destroy the obstacles which oppose the circulation of the blood in the capillary vessels, to disembarrass the sanguineous vessels, and re-open a passage for the blood. The heart and the arteries are the principal agents in fever." All the other nosologists, not excepting the sage Pinel, have fallen into the same contradiction, that is to say, after having blamed loudly, the research after occult causes—are themselves subsequently, insensibly led into this research, under some pretext or other.

One, alone, perhaps, forms an exception to this general statement. This was Joseph Lieutaud, physician of Louis XVI., and author of an anatomo-pathological compilation, which we have before mentioned. M. Dezeimeris expresses himself as follows, on the subject of his treatise on Practical Medicine: "this is the best work of the last century, and nearly the only one, up to a period very near our own, in which we find an author untrammeled by any system, consulting more the phenomena furnished by observation, at the bed side and in the amphitheatre, than the oft repeated opinions of books; and not seeking to fill by hypotheses the vacancies which experience has permitted to exist in the science. Most of the defects of this remarkable work may be refered to its brevity; the author, from having sought to be short, is often too condensed, incomplete, and obscure for a reader who is not sufficiently instructed. These same defects are carried to a still higher degree, and have destroyed the utility of another work of Lieutaud, of which the object was certainly the most important which could have been chosen during the last century: I mean the treatise on pathological anatomy, in which Lieutaud undertakes to comprise all that had been learned up

that time, on the seat and causes of diseases, by autopsy. The object is missed for the most part, because the history of the symptoms of diseases is nearly always cut short—the description of the alteration of the organs often insufficient; and because one can only with great difficulty fill its vacancies, owing to the absence of all references to the sources whence the facts were drawn."*

In his *Précis de Medicine*, Lieutaud has followed the anatomical order as much as he possibly could; for he says there are many diseases, on which the opening of the body teaches us nothing, and it is good not to loose sight of this fact, in order not to regard as an omission the silence which I maintain on this subject, in several articles. As to the research of occult causes, he was sensible enough not to engage in them, and gives the following excellent reason; "as I have not been willing to bring into this collection any hypotheses, I have not paused to consider the *immediate and proximate causes* exposed with so much vanity and presumption in books, though always impenetrable; but I have mentioned those that are termed *evident* and *remote*, which may unveil with much less ambiguity the character of diseases."

These are sentiments worthy of all approbation, and we can not too much praise those authors who have remained faithful to them. But it does not suffice to avoid hypotheses in a nosology: it is also necessary, and this is capital, to give exact and detailed descriptions of each morbid species. Too much brevity in the description of diseases causes obscurity, which is, after error, the greatest defect in a work of this kind. The classifications may vary infinitely, because they depend on the manner in which an author surveys his subject, and as diseases are very complicated subjects, they may be considered in a great number of aspects, but the description of each morbid species, when well made, preserves its value, independent of all changes of classification and system. This is seen in some of the description of Hippocrates, Aretæus, Alexander de Tralles, and all great observers.†

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* Dictionnaire Histor. de Med. Art. LIEUTAUD.

† At the moment of correcting this leaf, I am put in possession of the new work of Professor Bouillaud, éntitled, *Traité de Nosographe Médicale*, Paris, 1846, 5 vol. 8vo. A work of this importance, by a clinical teacher, and a profound observer, like M. Bouillaud, can not fail to fix the attention of the medical world; besides, I think I ought to exhibit the plan adopted by the author in his nosological treatise. This work is divided into *Twelve Classes of Diseases*, viz.;—*Class I*, fevers and inflammations, or pyrexiæ.—*Class II*, affections consisting in a want of vital excitation; *appendix*, excess and defect of hæmatosis.—*Class III*, ataxiæ of the nervous centers.—*Class IV*, miasmatic and virulent diseases.—*Class V*, heterotrophic,heterocrinic, and heterogenetic diseases, not originating from inflammation.—*Class VI*, effusions in general, and effusions of blood or hemorrhage, in

## CHAPTER V.

### INTERNAL THERAPEUTICS.

I EXAMINED, in the preceding period, the ancient therapeutical axiom, diseases are cured by their contraries, and the result at which we arrived was, that this axiom neither clears up nor explains anything in many cases, and that in others, it is in flagrant contradiction to the facts. I concluded, therefore, that it should be erased from therapeutics, at least as a general axiom, if we wished to rest this science on a solid basis, whose certainty no one could contest. During the present period, the same principle appears under new forms; at the same time other axioms will be proclaimed, concurrently with it, some of which are connected with the ancient doctrines, others with those that are entirely modern; but as all the general principles of therapeutics are derived, without exception, from some cotemporary physico-pathological system, we shall exhibit them conjointly with those systems, and submit them to a thorough examination. Consequently, we shall not discuss them in this chapter, and only speak for the moment of a small number of material conquests of therapeutics, of some evident ameliorations attained in the treatment of certain diseases, the utility of which is incontestible, and whose merits are independent of all theory.

#### TREATMENT OF SYPHILIS.

We have seen the venereal disease, taking the place of the leprosy of the middle ages, extend its ravages with a frightful rapidity, and throw the people into a terror nearly equal to that which its predecessor had inspired. The learned physicians sought in vain, in the Greek authors, the means to combat this scourge; such as they found there were perfectly inefficacious. The surgeons, on the contrary, who had borrowed from the Arabs certain mercurial preparations, which they employed against tetters, were naturally influenced to make a trial with the same preparations against venereal pustules. The success that they obtained encouraged them to persist in their use. The celebrated anatomist,

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particular.—*Class VII*, solutions of continuity, and abnormal communications. *Class VIII*, changes in position and direction, or displacements and deviations. *Class IX*, adhesions, connections, and abnormal insertions.—*Class X*, changes in extension, volume, and capacity.—*Class XI*, foreign and retained bodies.—*Class XII*, changes in respect to form, number, and existence of organs, and their constituent parts.

Berenger de Carpi, was the first who prescribed mercurial frictions with discretion, and watched their effects. He effected, by this medication, numerous cures. Before him, Conrad Gilinus had made known, in the year 1499, the composition of an ointment, in which quicksilver formed the fourteenth, and the bi-chloride the twenty-eighth part. Gaspard Torella, physician to the pope Alexander VI., and of his son, Cæsar Borgia, to whom he dedicated his work on the pox, in 1499, also makes mention of a mercurial ointment.

This ointment was the first mercurial preparation used in Medicine, and for a long time no other was known.* An old prejudice opposed the internal administration of any composition of which quicksilver formed a part, because this metal was regarded as a virulent poison. Paracelsus was, perhaps, the first one who had the boldness to administer it in this way. He says that he did not consider mercury as a real, efficacious anti-venereal, and exempt from all danger, only when taken in this way; and corrosive sublimate was thought to form a part of some of his numerous secret formulæ.

Besides, under whatever form and by whatever way, mercurial salts are administered, their employment requires precautions that were not then known. On this account, formidable accidents, such as dysenteries, profuse and obstinate salivations that exhaust the patient, convulsions, paralyses, and mortal consumptions, were often observed in persons who had used mercurials. Such grave accidents following a mercurial treatment, most physicians abandoned it, and it fell into the hands of greedy charlatans, ignorant medicasters, and alchymists, who employed it without stint or precaution, after the example and faith of Paracelsus, and thus brought it into discredit.

At the same time, it was supposed that other means of healing, less dangerous, and not less sure, were found. The decoction of the wood of guaiacum produced excellent effects on many patients who had made abuse of hydrargyric preparations. Thus the chevalier Ulric de Hutten, after having been in some sort saturated with mercury, found himself in a deplorable condition; he employed this decoction, and recovered his health, against all hope. Full of joy and gratitude, he wrote a book, to recount the marvels of this sovereign specific. Fracastor devoted to its eulogy the major part of the third volume of his poem on syphilis, published in 1530. Practitioners of the first order recommended it, such as Nicholas Massa, who was also a skillful anatomist, and Musa Brasavolo, who was decorated with the title of archiater, by

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* Guy de Chauliac gives the formula of an ointment into which mercury entered for a tenth part.

four Popes, and with that of consulting physician by Charles V., Francis I., and Henry VIII., king of England. Divine Providence was praised for having created this precious tree in the country even, which was regarded as the cradle of the venereal pest, placing thus the remedy, as was said, by the side of the evil. Shortly after, sarsaparilla and china-root shared the antisyphilitic reputation of the guaiacum.

But after a half century, the renown of these exotic vegetables fell considerably. The cures effected by their means, became more and more rare, and finally it was ascertained that alone, they had but little efficacy, and that in our climates they only succeeded when used with, or after, mercurial preparations. The chemical physicians had never discontinued their employment of the latter, but they studied to mask them, and prevent dangerous results, by all sorts of combinations. A prejudice, which was derived from the reigning theories, opposed the perfection of treatment by mercury. The prevailing opinion was, that the venereal virus should be expelled either by sweats or salivation, or by some other emunctory, and in no other way was it supposed that a radical cure could be obtained. Richard Wiseman, surnamed the Paré of England, signalized, among the number of mercurial preparations used in 1676, corrosive sublimate, dissolved in water, and taken internally, in a dose sufficient to excite vomiting, or produce salivation.

Nicholas Pechlin, and Francis Chicoyneau, were the first who stood up against this prejudice, at the beginning of the seventeenth century. This idea became the signal of a great progress. In 1750 Van Swieten, disciple of H. Boerhaave, and physician to the queen of Hungary, directed all physicians of the military and civil hospitals of the Austrian empire, to treat syphilis after a uniform method, whose efficacy and harmlessness a long experience had revealed to him. It consisted principally in prescribing each day about a third of a grain of corrosive sublimate, dissolved in six ounces of some vehicle. All the reports were favorable to this plan, and the public eulogies bestowed upon it, encouraged very many practitioners to adopt the use of the *liquor* of Van Swieten. Pringle introduced it into the military hospitals of Great Britain, and the English army-surgeons gave good accounts of it.

As may be supposed, the formula and the doses prescribed by Van Swieten were modified, in certain circumstances, to satisfy particular indications. Mercury still continued to be associated with the sudorifics, sometimes with opium. It was given in pills, solution, friction, etc. Thus, at the date of this epoch, the Healing Art could boast of possessing, against the great generality of venereal accidents, an almost infallible specific, which, handled with circumspection, is never, or very rarely, followed with bad results.

TREATMENT OF PERIODICAL DISEASES.

Under this denomination we now comprise a multitude of diseases extremely common aud varied. They constitute two very distinct genera, accordingly as they present themselves under the form of pyrexia, or apyrexia. The first, which are the most common and the gravest, have been known from all antiquity. They are described by ancient authors under the title of intermittent and remittent fevers. The second, that is to say, the periodical affections without fever, have only been observed since the middle of the eighteenth century—the time when Casimir Medicus first assimilated them to intermittent pyrexiæ. The ancients did not know any specific treatment against periodicity. The following is what Hippocrates prescribed in intermittent fevers of various types: "When any one is tormented with bile, he has every day a fever, which arises at midday, and then ceases. In this state a purgative should be given, on the ninth day. If the patient has no evacuation by the mouth, he should be purged; but if he is feeble, injections of water should be employed, only. When the fever permits, a hydromel should be administered in the morning, before the purgatives. Pure water should be given the following days, and as much as the patient wishes to take, during the whole duration of the fever. As soon as the fever appears to be over, a tisane with cream, a a little milk, followed by good wine, diluted with water.

2. In the tertian fevers, a purgative should be given after the fourth paroxysm. When it is thought best not to purge, give about two ounces of the juice of the quintifolium, in water; if this is not beneficial, a bath should be given, and immediately the juice of the sylphium (*ferula tingatana*, Lin.), with clover, in equal parts of wine and water. The patient should be kept well covered in bed, to produce perspiration. During the perspiration, if he thirsts he is to drink water whitened with flour. In the evening he should take a little millet cream with some wine in addition. He must use sound food until he is cured.

3. In the quartan fever, the purgation must begin at the head, afterward through the bowels. During the two days of intermission, a bath is to be given, and the patient must drink wine, in which some grains of henbane and mandragora have been infused, with a drachm of the juice of sylphium and of clover. When the stomach is full, an emetic is to be given. After the following paroxysm, in coming from the hot bath, he must be kept covered until the perspiration begins, when he must take a second vomit. If the fever does not cease, the head must be purged again, and the patient be placed upon the use of emollient

and bitter aliments, and continue to take the hot baths in the days of intermission.*

No notable amelioration was introduced in the treatment of intermittent fevers, from Hippocrates till toward the middle of the seventeenth century of the Christian era. Those which were of a benign nature and reigned sporadically, were cured well enough after a longer or shorter period; but those which were developed under the influence of a pernicious epidemic constitution, prevailed with murderous fury, carrying off the patients in the third or fourth paroxysm. A good number even of these, which were not of a malignant nature, after having resisted all remedies, degenerated into visceral obstructions, hydropsies and phthisis, which conducted the patient by slow degrees to the tomb.

In 1638, the Countess of Cinchon, the wife of the Vice-king of Peru, was a prey to a fever from which nothing would deliver her. A Spaniard, some say that it was the Governor of Loxa, having learned from the natives of the country the secret of the febrifuge qualities of the cinchona, advised the countess to employ it. She, after much hesitation, resolved to try it, and recovered her health as by enchantment. Such is, according to the most accredited opinions, the origin of the great reputation of this bark; nevertheless, M. A. de Humbolt discredits a part of the story. He asserts that the aborigines of the neighborhood of Loxa, as well as other provinces of South America, where intermittent fevers are very common, far from suspecting the febrifuge virtue of the bark, often prefer to die rather than make use of it. They believed, formerly, even, that the Europeans sought this substance with so much earnestness only as dye stuff. Humbolt infers from this, that it is not very probable that the Indians furnished to the Spaniards the first indications of the medical properties of cinchona. However this may be, it is not questionable that in 1639, the Countess of Cinchon and her physician, Juan Lopez de Véga, imported into Spain a certain quantity of this bark, reduced to powder, and distributed it to various persons. But it was not made an article of commerce till ten years later, by the Jesuits of Rome, who had received a considerable mass of it. It was retailed in Spain as the "Countess' Powder," and in Italy as the "Jesuits', or Cardinal's Powder." As it was very dear, it was soon adulterated in so many ways as to make it very difficult in the end to procure it of pure and good quality.

Accident thus had placed in the possession of Medicine a precious remedy; but there remained an immense task for science to fullfil. It

* Hippocrates, Treatise on Disease.

was necessary: First, to determine the botanical characters of the plant which furnished it, in order that it might be recognised wherever found; Second, to ascertain the chemical elements of good cinchona, in order to uncover the sophistications of which it was the subject, and to separate, if possible, its active principle from the other elements; Third, and lastly, to establish its curative properties, to fix the curative indications it should fullfil, the most advantageous modes of administration, suitable doses, etc.

La Condamine was the first who gave a description sufficiently complete, of the tree which produces the cinchona. This illustrious geometrician having been sent to America to measure several degrees of the meridian of Quito, found himself placed, from the nature of his operations, in the regions where these trees grow. He described several species of them, furnished precise instructions concerning the qualities of the barks, the size and thickness of the trees, the places where they are found, etc. His work, which was printed in the memoirs of the "Academy of Sciences," in the year 1738, served as a guide for Linnæus, to trace the characters of the genus, to which he gave the name of cinchona, in memory of the lady who first introduced the plant into Europe.

Many other naturalists endeavored to complete the natural history of the genus cinchona. They discovered a great number of new species, which they found north and south of the equator, and in very different latitudes. Among these, I will cite first, Celestino Mutis, to whom we owe the description of the britannic riches of New Grenada, and especially of several species of cinchona, unknown till then; Ruiz and Pavon, authors of the flora of Chili and Peru; MM. de Humboldt and Bonpland, whose travels in the equinoxial regions have thrown so much light on all the departments of the physical sciences and natural history.

A great number of chemists have attempted to penetrate the intimate constitution of cinchona.* Poulletier de la Salle made the first important remark on the alcoholic extract of the substance. Instead of considering it, according to the common opinion of his times, as a resine, he observed that water dissolved it; and he called it resiniform matter, because its resinous characters appeared to him more marked than the gummy ones. I will cite, also, because it has shed some light on the intimate constitution of the bark of Peru, the analysis of Buquet and Cornette, charged by the Royal Society of Medicine, of France, in 1779, to examine two specimens sent from Santa Fé de Bogota; that of Fourcroy in 1791; and that of Doctor Westring, consigned in the memoirs of

* Mérat et Delens, Dictionnaire Universal of Materia Medica and Therapeutics. Paris, 1833.

the Academy of Stockholm for 1800–1801. He directed his researches toward an end eminently useful; he proposed to determine, among the constituent principles of cinchona, the one to which its curative virtues belonged. If he had not the glory to attain an end so desirable, he had, at least, the merit of indicating it. Later, we shall see the labors of two French chemists crowned, in this respect, with complete success.

Nevertheless, the most important and most difficult questions to solve, on the subject of the new medicament, did not lie within the reach of either botany or chemistry, but rather of practical medicine. It is the latter which had to pronounce definitely upon the value of the curative properties attributed to the substance, on the modes of its administration and proper doses, and on the pathological circumstances which may indicate or contra-indicate its employment.

The first one who wrote on the medicinal virtues of cinchona, was a Spanish physician named Barba. He demonstrated the efficacy of this powder in a tertian fever, and replies to the objections of some physicians of his country, who condemned its use. His book was printed at Seville, in 1642. Morton speaks of a short treatise drawn up in 1651, by the physicians of Rome, which fixed the dose of the powder at two drachms, and recommended the employment of laxatives before administering it. They advised, after its administration, to await, tranquilly, the sweats it usually provoked, before recurring to any other remedy.

About the same time, cinchona was introduced into England, but it soon fell into contempt, owing to the ignorance of the true manner of administering it. Several patients perished from its improper use—among others Senator Underwood and Captain Potter—which disgusted many physicians with its use, but instigated others, especially the sage Sydenham, to seek a better method for its administration.

A charlatan named Talbot, or Talbor, profited by the discredit into which this substance had fallen, to administer it as a secret remedy. After having astonished London by his numerous cures, and amassed a fine fortune, he went to Paris, where he obtained no less brilliant success; among others, he cured the Dauphin of an intermittant fever, which the court physicians had not been able to cure. The king bought his secret for the sum of two thousand louis d'or, and a pension during life of two thousand francs. After the death of Talbot, the French Government published his recipe, the principal ingredient of which was nothing but cinchona, disguised by the addition of other substances.

At the head of those persons who contributed to propagate the methodic employment of the Peruvian bark, I must name Sebastian Badio, or Baldies, whose dissertation, published in 1663, had especially for its aim to refute the attacks of Chifflet and Plempius against this remedy;

Richard Morton, a celebrated practitioner of London, whose Pyretology, published in 1692, had, for a long time, a distinguished reputation; and, above all the preceeding, Francis Torti, professor of medicine at the Gymnasium of Modena, and author of a classic treatise on pernicious fevers.* No one had before demonstrated with so much force and reason, the superiority of cinchona over all other remedies, in that class of diseases, and no one had refuted in so victorious a manner, the objections of its adversaries. He wrote at the beginning of the eighteenth century, from which period we may regard the cause of cinchona as gained. After him, Werlhof published new observations, which fully confirmed those of the professor of Modena. He demonstrated the futility of the arguments founded on theories, and demanded only the proofs of experience. His writings are a model of urbanity, elegance, and sound erudition. After having proved how vain were the high controversies on the essence and proximate causes of fevers, he recounts, among others, the following anecdote: "The empiric Talbot was one day called to a patient attacked with a chronic fever. His physician, who had been in attendance a long time without effecting anything, consented to admit Talbot to consultation, with very great repugnance. As soon as they were assempled, the dean of the consultation gravely asked Talbot this question: 'What is a fever?' 'A fever,' responded the latter, very reverently, 'is something which I cannot define, but which I can cure; while you, perhaps, may be able to define, but cannot cure it.'" †

In the second half of the eighteenth century, Casimir Medicus assimilated, under certain aspects, periodical affections without fever to intermittent pyrexiæ, and applied the same treatment to them with great success. This happy employment of cinchona against a new order of diseases, added very much to the importance, already very great, of this exotic medicament.

### TREATMENT OF OTHER, DIVERSE DISEASES.

We have mentioned the prophylactic treatment of variola, in the chapter on Hygiene, and endeavored to appreciate the extent of the services rendered to humanity by the practice of inoculation, and above all, by the discovery of vaccination, which we shall not dwell upon again. But, besides these capital ameliorations, several others, less striking, which have also their utility, were introduced into the treatment of several diseases. Therapeutics essayed to appropriate to its use a quantity of new substances but little known to the ancients; such

* Therapeutice specialis ad febres periodicas perniciosas, Mutinæ, 1712. Nova editio curantibus Tombeur et Brixhe, Leodi, 1821.

† Werlhof, Observations de febribus.

as the different gases, electricity, galvanism, tartar emetic, proscribed by a decree of the parliament of Paris,* ipecacuanha, belladonna, digitalis, etc.

In short, the period through which we have just passed has effected in therapeutics ever memorable improvements: the ravages of variola, so to say, annihilated in its source; those of intermittent fevers, and periodical affections in general, arrested at their beginning; the repulsive contamination of syphilis, which menaced the human species with a progressive degradation by its hereditary transmissibility, unmasked and vanquished in the most of its metamorphoses; in fine, a multitude of secondary ameliorations introduced into the treatment of many other diseases, without counting the improvements so remarkable in surgery and obstetrics, of which account will be taken hereafter: behold, unquestionably, imperishable titles to the gratitude of all generations; and if the modern tables of mortality do not lead us into error, if the extension of the mean duration of life, established by them, is a reality, as we are all led to believe, what science can claim, in this happy result, a part equal to that of medicine?

An important remark on the subject of all these beautiful improvements remains still to be made, which is, that they were all accomplished, not in virtue of prevailing theories, but in spite of them; that the greatest obstacles they had to surmount, to become established, came from these very theories. If mercurial medication was continued, so as to excite salivation, or to the production of those injurious effects which made it formidable, it was in perfect harmony with the Galenic theory, according to which it was not doubted but that the syphilitic virus circulated with the humors of the body; whence it followed, that it was necessary to provoke some evacuation or other to expel this virus. What was the reproach that the adversaries of cinchona brought against that medicament? It was, that it produced no sensible evacuation. Now, in their opinion, founded on the authority of Hippocrates, Galen, and others, the proximate cause of intermittent fevers could be nothing else than vitiated bile or phlegm; so that a medicament which expelled neither the bile nor the phlegm, could not, according to their doctrine, radically cure an attack of fever. The Stahlites made a more specious objection still, to the employment of cinchona; they said that fever is a natural and salutary effort of the soul, to free itself from an injurious substance, and that to suspend or arrest the accession, was contrary to the tendency of the vital principle, and produced, in reality, more harm than good. If vaccination itself has encountered opponents, was it not especially

* See Lettres de Gui Patin, with Notes by Reveillé Parise; Paris, 1846.

because the Arabs, who first described variola, had at the same time propagated the opinion that the principle of this disease is innate in man; whence it was concluded, that to prevent its spontaneous development, was to oppose the proper action of nature—to keep the enemy in his place?

In the opinion of every one, the progress that therapeutics made, and which we have just pointed out, was due to the pure experimental method, *i. e.*, to Empiricism; not to that blind and ignorant empiricism of charlatans, and medicasters, and pharmacopolists, who content themselves with asking the name of a disease, and without other knowledge deliver, without hesitation, their drugs, but to the enlightened and methodic Empiricism which calls to its aid all the positive indications of physiology, pathology, and the accessory sciences—to the empiricism of Sydenham, Morton, Torti, Werlhof, Berenger de Carpi, Van Swieten, Lieutaud, Stoll, Jenner, and other practitioners of such merit; to that Empiricism for which Kurt Sprengel offers apologies, in so many instances, and notably, in chapter second and third, of the sixteenth section of his History of Medicine.

## CHAPTER VI.

### EXTERNAL PATHOLOGY AND THERAPEUTICS.

We have seen that surgery, after having been so long disdained and oppressed by the Clinical physicians of the middle ages, was gradually elevated from this abasement, and signalised its resurrection in Europe by discoveries and improvements of the highest interest. The sixteenth century had produced some surgical reputation out of line, but the first half of the seventeenth was less fruitful in illustrations of this kind. During this lapse of time, Severin Pinau and John Bienaise are nearly the sole representatives of French surgery; Marcus Aurelius Severino and Peter de Marchetti sustained still, somewhat, the glory of the Italian school, which declined, after them, to flourish again only toward the close of the eighteenth century; Germany saw arise no worthy successor of Fabricius de Hilden; in Switzerland, no one replaced Felix Wurz; Holland possessed only John Van Horn; and England, until then one of the countries most in arrears, in the progress of surgery, gave birth to a man who revived, and was the dawn in her, of the genius of surgery. Richard Wiseman was the A. Paré of the Brittanic nation; his collection of treatises has always preserved its interest, as one of the most precious monuments of English surgery.

Toward the close of the seventeenth century, and during the whole course of the eighteenth, this branch of the Healing Art emerged anew from its state of stagnation, and took a development, of which no other period in its history offers us an example. Among the causes which contributed, in France, to give it a strong impulse, we shall cite, in the first place, the creation of five chairs of demonstrators of anatomy and surgery, instituted in the college of Saint Come, by letters patent, in September, 1724. G. Mareschal, first surgeon of Louis XV., and La Peyronie, his friend and colleague, who was destined to be his successor, were the first instigators of that measure. La Peyronie completed it, in adding to the five royal demonstrators, a sixth, for the course on accouchements, and six adjuncts, whose salaries he paid himself. This enlightened philanthropist did not limit his benefits to the capital; he obtained for Montpellier the nomination of four professors and four adjuncts, who were required to include in their lectures all branches of surgery. But he lacked an amphitheater, and no emoluments were attached to the chairs which were just created. La Peyronie removed all these difficulties, and provided everything from his own purse. In fine, he secured the future of these institutions, by leaving in his will provisions for their support.

It is to him, also, and to Mareschal, that France was indebted for another endowment, which exercised, during more than half a century, a powerful influence on the progress of surgical studies in Europe. The Royal Academy of Surgery, instituted in 1731, became, from its origin, a focus toward which converged the labors of a crowd of surgeons of France and foreign nations. It received, among others, communications from John Louis Petit, Ledran, Garengeot, Lafaye, Cæsar Verdier, S. Morand, Quesnay, Hévin, Fabre, Lecat, Puzos, Bordenave, Sabatier, and above all from A. Louis. To the Royal Academy of Surgery we must attach the names of Lamotte, Ravaton, Friar Come, Master John, Anthony Petit, Pouteau, etc., who shared its fame, and enriched science by their writings. Then succeeded, in the history of this Art, the School of Practical Surgery, (*Ecole Pratique de Chirurgie*) established by a decree of council, in 1750. It was here that Chopart taught with so much zeal, and where his intimate friend, P. J. Desault, commenced, as clinical professor. That clinic, the first which France offered as a model, soon acquired a European renown, and, to such a hight, that neighboring nations sent to Paris pensioned students, to follow the course of Desault. From this school came forth Anthony Dubois, A. Boyer, and so many others that the enumeration would be too long.

While, by a happy concourse of circumstances, French surgery shone thus, in the first rank, the neighboring nations advanced in the same

career with a praiseworthy emulation. England could enumerate with pride Cheselden, Douglas, the two Monros, Sharp, Cowper, Pott, B. Bell, J. Hunter, etc.; Italy had her Molinelli, Bertrandi, Guattani, Moscati, Scarpa; Holland possessed Deventer, and P. Camper; Germany, and the countries farther north, saw flourish L. Heister, John Zacharia Platner, Stein, Rœderer, Brambilla, Acrel, Callisen, Theden, Augustus Richter, etc.

From the concourse of all these celebrated men, and a great number of others, external pathology and therapeutics were elevated to an unheard of degree of perfection. Surgery showed itself worthy to march the peer of Medicine, and the inseparable union of those two twin-sisters, was sanctioned in France, at the time of the restoration of its Medical schools, in 1795. To give an idea of the numerous ameliorations accomplished in external pathology and therapeutics, during the Reform Period, we will take a rapid glance over the history of some of the principal Surgical operations.

### WOUNDS OF THE HEAD.

Among the operations to which the wounds of the superior part of the body may give rise, one of the gravest and most delicate, is, beyond contradiction, that of trephining, which is often alluded to in the Hippocratic works. The manner of executing it; the cases where it is indicated; the dangers to which it exposes the patient; the precautions that it requires, are all traced with a correctness which proves, that, for a long time, the Asclepiadæ had been in the habit of practicing it.

The Surgeons of the Alexandrian school, notwithstanding the superiority of their anatomical knowledge, added very little to the precepts of the Hippocratists, concerning this operation. Celsus furnishes only a few details on the modes of operation and on the form of the instruments.* The Greek and Latin physicians of the following ages abandoned the great operations, and limited themselves in the treatment of the wounds of the head, to the use of ointments, cataplasms and other external applications, which they decorated with the title of *vulnerary*. Among the Arabs, Albucasis alone, seems to have employed the trephine. Among the clergy who monopolized the Healing Art during the middle ages, Guy de Chauliac was the first, to draw from oblivion this instrument, and the operation it recalls. From that period trephining never fell into disuse again. The forms of the instruments employed by the ancients were modified in various ways,

* Liv. viii, chap. iii, edition of Ameloveen, Amsterdam, 1713.

but efforts were especially made to establish the indications with exactness; but, in short, no capital improvement was introduced by moderns into this branch of Surgery.

### DISEASES OF THE EYE.

*Cataract.*—The ancients had only very confused ideas on the nature and seat of this affection. Celsus, who was the first to speak of it, says: "Often as the result of a blow or a disease, the humor contained in the empty space which I have said exists behind the two tunics (the transparent cornea and the iris) becomes concrete, gradually hardens, and obstructs the sight; there results from it an infirmity which is sometimes curable and sometimes not.* Then the Roman encyclopedist enumerates the cases in which an operation may be attempted with some hope of success, and those in which it appears formally contra-indicated. These last are, according to him, much the most numerous.

As to the mode of operating, he describes only the one that is known as the method of couching. However, he does not doubt but that the method by extraction was known to the ancient Greeks. Rhazes, who gives a detailed description of it, assures us that it was practiced by Antyllus, a celebrated surgeon, who lived at the commencement of the second century of the Christian era.†

Paul of Ægina, and Albucasis, followed the method of Celsus; the ecclesiastical physicians of the middle ages knew no other; and those of the Erudite Period did not show themselves any more bold, notwithstanding the progress of anatomy. During all this period of time, the method by extraction was completely abandoned by instructed surgeons. A few intinerant operators only, dared practice it; but the men of the Art rejected it because it occasioned the loss of the humors contained in the chambers of the eye, an occurrence which they believed very formidable.

It was only towards the close of the seventeenth century, that sounder ideas on the nature and seat of cataract began to prevail. It was then ascertained that it did not proceed from a condensed humor, as had been taught by Celsus, nor from a thin pellicle spread before the pupil, as had been believed in the middle ages; but that it consisted in the opacity of the crystalline lens, or its capsule. This was a great step towards the rational treatment of this disease. From that time two species were distinguished, namely, the crystalline and the capsular; and the signs were established to determine each of them. The certainty

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* Loc. Cit. † Continens, lib. iii., chap. iii.

of the renewal of the humor of the chambers of the eye was also ascertained, which removed all apprehension about any injury from its discharge. Consequently they established much better than ever had been done before, the indications which should determine the surgeon to prefer, in certain cases, such or such a mode of operation.

*On Fistula Lachrymalis.*—It is also in the work of Celsus, that we find the first mention of this disease, which the Greeks named *ægilops*. The ulcer, he says, sometimes attacks the os unguis and penetrates to the nostrils. When it assumes a carcinomatous form, it would be not only useless, but also dangerous to touch it. If on the contrary the disease is recent, and is not too extensive, a cure may be hoped for. To effect this, the superior part of the ulcer should be seized with a crotchet, and incised to the bone. Then the osseous canal should be penetrated with a red hot iron, care having been taken previously, to protect the eye and surrounding parts, so as to guarantee them from the contact of the heat. Some prefer the use of caustics, as the green or blue copperas, but these remedies act slowly, and in a variable manner.*

To this method the Arabs added three others, namely, compression, injections, and tents. Rhazes was the first to remark, that a continued pressure, seconded by frictions, suffices to cure certain fistulæ lachrymalia. He speaks also of injections that may be used through cannulæ. Avicenna counsels the introduction into the nasal canals, of a thread saturated with depuratives, which must be withdrawn every day, until the passage be entirely free. We see by this the Arabs knew nearly all the methods in use among moderns, in this disease.

The Latins of the middle ages employed only escharotics and the actual cautery. Those of the Erudite Period employed exactly the same means; but in the course of the seventeenth, and especially of the eighteenth centuries, all the proceedures known to the Arabs were still honored, and considerably perfected, and a better judgment was formed of their advantages and particular inconveniences.

*On the Synizesis or Synechia.*—The pupil is susceptible of a morbid constriction, and even a complete obliteration, which constitutes the affection called synizesis. This occlusion is rarely congenital; however it may be in the newly born, resulting from the persistence of the pupillary membrane. Such individuals are born blind, though their eyes possess otherwise all the conditions requisite

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* Celsus, lib. vii. chap. vii. § viii.

for seeing. Accidental synizesis is much more common, and occurs from varied causes: sometimes it arises as the result of an operation for cataract, or a violent inflammation of the eye: again, it has been attributed to the repercussion of any morbid vice, such as that of tetter, gout, etc., and it may manifest itself without any apparent cause.

The ancients did not attempt the treatment of this infirmity, and the unfortunate who were attacked with it, went the rest of their days deprived of sight. In 1732, William Cheselden published the history of a very delicate operation for its relief, which he had successfully performed. This operation consisted in making an opening or artificial pupil, in the center of the iris. The same operation was repeated several times afterwards, but never or rarely ever succeeded; the process of Cheselden was therefore judged defective. Other surgeons made useful corrections in it, by means of which, they obtained better results. Thenceforth the operation was a therapeutical conquest, and took rank among the discoveries of modern surgery.

### DISEASES OE THE NOSE.

*Nasal Polypus*—The Hippocratic works mention four species or varieties of this disease, and they indicate a curative method appropriate to the nature of the excrescence in each case. If the polypus is soft and adheres by a small pelicle, it was advised to tear it loose and draw it forth. If it was hard, it was to be cauterised with the actual cautery. If it was soft and adhered by a large pelicle, a ligature was used. If of a stony hardness it was to be excised. In all cases, the cure was terminated by mild caustics and emolients.

The Greeks of the following ages added very little to these precepts. The Arabs and the Latins of the middle ages adhered to the ligature and caustics only; but at the epoch of the restoration of the sciences in Europe, all the means employed in antiquity, were restored to practice and examined. A closer study of the effects of each of these applications was carefully made. Gabriel Fallopius and Andrew Levret concurred, especially to clear the diagnosis and treatment of this disease.

*Rhinoplasty*—This word is intended to designate an operation which is designed to reconstruct the entire, or a considerable part of the nose. Peter Ranzano, Bishop of Lucern, is the first who made mention of it in his Annals of the World. According to the report of this historian, there lived in Sicily, in 1442, a family of the name of Branca, which possessed the art of reconstructing the nose and other parts of the face, from the flesh of the arm. This art passed from Sicily into Calabria,

where it was practiced by the family Vianco, or Bojano, at the commencement of the sixteenth century. Alexander Benedetti, a celebrated physician of that time, furnishes us exact notions of the mode of operating practiced by the Calabrians.* But toward the close of the same century, we find no longer in Calabria any trace of Bojano, or rhinoplasty. Gaspard Tagliacozzi, professor of surgery in the University of Bologna, was then the only man who practiced this operation, whether as his own invention, as he pretends, or as acquired from the descendants of the Calabrians. Ambrose Paré recounts the history of a chevalier of Saint Thoan, who after having for a long time worn a silver nose, was by the skill of the Italian professor, furnished with a well-formed nose of flesh. In 1597, Tagliacozzi published a treatise on the art of restoring the nose and ears, which had been destroyed or mutilated.† Thomas Fyens, who made an extract from this work, assures us that he had seen several persons upon whom the author had very happily operated.‡ Fabricius of Hilden, reports that a surgeon of Lausanne, named Griffon, having possessed the knowledge of the process of Tagliacozzi, repaired so well the nose of a young girl, that twelve years after, the cicatrice was scarcely perceptible. In fine, John Baptist Cortesi, a cotemporary of Tagliacozzi, and his colleague at the University of Bologna, gave a detailed description of rhinoplasty, which he assures us he had himself practiced.

Notwithstanding these undoubted proofs, the art of restoring the nose, fell again into oblivion, for nearly two hundred years, and to such a point, that at the close of the last century some physicians considered it doubtful whether it had ever existed, when a journal of Madras published, in 1794, an observation of rhinoplasty executed with success on an Indian, after a method formerly known in the country. This procedure consisted in detaching from the skin of the forehead, a flap, out of which the nose was to be formed, while the Tagliacotian operation consisted in taking the flap from the arm, in the deltoid region. The same operation was afterwards repeated in France, England, Germany, and other places, with various modifications and results, so that a doubt about its reality was no longer permitted.

### DISEASES OF THE MOUTH.

*Hare-lip*, or split-lip, an infirmity ordinarily congenital and sometimes accidental, is not described in any Greek author. Celsus, who is the first to mention it, speaks of it and its treatment, only in a very succinct manner. The Arabian writers are not more explicit, with the

* De Remedica Opus Basil 1539. † De Curtorum Chirurgia, Venice, 1597.
‡ De Præcipuis Artis Chirurgiæ Controversiis.

exception of Albucasis, who expresses himself about it with more exactness and detail than all his predecessors. He advises sometimes that the separated borders of the lip be cauterised, to excite suppuration; sometimes to excise them, so as to sew them together, and to cover the wound with an ointment of dates. After him, A. Paré was the first who described the hare-lip and its operation. He employed, to join the freshened edges of the lip, steel needles, around which he wrapped a waxed thread, in the form of the figure ∞ . Peter Dionis proved that the resection is always more prompt and sure than cauterisation. His idea was generally adopted and still prevails. He performed the excision with scissors; others preferred the bistoury, but this difference is of but little importance. The steel needles have been replaced, on account of their rusting, by needles of silver or gold, which are withdrawn more easily, without tearing the flesh.

### DISEASES OF THE TEETH.

The Art of Dentistry formed among the Egyptians, as it does yet in many countries, a particular branch of Surgery, and was practiced by men more or less ignorant of the rest of the science. Nevertheless, physicians have also occupied themselves with it, from the earliest times. Erasistratus speaks of an odontagogue of lead, which was suspended in the temple of Delphos, to indicate that only such teeth as were greatly decayed, should be extracted. Hippocrates gives the same precept: "Extract," he says, "the carious teeth; but when they are neither rotten nor movable, and yet cause various pains, it is proper to apply fire." Celsus shares the same opinion, but he enters into much more detail, on the subject of the operations usually performed on the teeth. "Sometimes," he says, "the teeth are movable because the roots have little or no hold, and the gums are soft and fungous; in either case the surface of the gum should be touched lightly with the hot iron, whenever the tooth is carious. Do not determine too quickly to extract a tooth, unless it be utterly necessary. It will be better to add to the remedies prescribed above, more efficacious compositions still, to calm the teeth, such as opium, pepper, and sory, rubbed up together, and incorporated with galbanum, which is to be applied to the tooth. If medicaments can not appease the pain, and it is thought best to extract the tooth, it must be laid bare, and moved about so as to make its removal easy, for there is extreme danger in attempting to draw a tooth which is firmly fixed in its alveolus. When the teeth are black, and covered with tartar, the dark spots must be removed with a rasp, and the teeth rubbed with an opiate composed, in part, of bruised rose-leaves, and one-fourth of nut-galls and myrrh." Celsus recommends, also, to attach the loose

teeth to the adjoining sound ones by a gold thread. When in children the permanent tooth begins to press upon the deciduous one, before it has dropped out, the latter one must be extracted, and pressure be made upon the new one every day, so as to constrain it to take the place of the other.

Albucasis is the first who spoke of dental prothesis; he substituted for a lost tooth another, either natural or artificial, which he fixed to its place by means of a thread of gold or silver.

The ecclesiastic physicians of the middle ages, neglected this part of the art. Guy de Chauliac complains loudly, that these operations had been abandoned to the barbers, bath-keepers, and other artizans, deficient in the technical knowledge of the evolution of the teeth; operations of such importance that no physician should disdain to undertake, or at least to assist in them. A. Paré adds to the laboratory of the dentist several instruments, some of which very much resemble those that are now employed. He is the first one who reports an authentic example of an extracted tooth being immediately returned to its place, and become consolidated.

In the course of the eighteenth century the Dentist's Art reached a degree of perfection it had never before approached. Several surgeons of Paris, Pierre Fauchard, Anselme Jourdain, Bunon, and Bourdet, contributed especially to its advancement, as well by their practical skill as by their writings. They conferred upon the hygiene of the mouth, and Dental Surgery, numerous sage precepts and useful inventions.

### DISEASES OF THE TONGUE, PALATE, AND TONSILS.

The operations that these diseases require, sometimes consist in scarifications, excisions, and cauterizations. We find them mentioned, more or less explicitly, in the Hippocratic works. Celsus describes them with more or less details; he speaks, the first, of the resection of the frenum, and the treatment of ranula. Paul of Ægina adds something to the precepts given before his time; but the Arabs only copied the Greeks on this branch of the Art.

The moderns have contributed additions and improvements to the above, which render these diseases less dangerous and more easily cured. They have also signalized some diseases of which the ancients have not spoken, such as salivary fistulæ, which are frequently met with in practice. That of the duct of Steno, which is the most frequent, was described for the first time, by Bartholomew Saviard, and also the operative proceeding which he made use of for its cure. He recounts that a man named De Roy, having pierced his cheek, from without inwards, with a red hot iron, at the point of the fistula, the external opening cicatrised, while the internal remained open.

### DISEASES OF THE EAR.

Among the affections which cause a loss, more or less considerable, of the faculty of hearing, and are susceptible of being relieved by the aid of surgery, the ancients knew only the occlusion of the external meatus, whether congenital or accidental. Paul of Ægina is the only one of all the old writers, who furnishes on this subject the most circumstantial and rational instruction. Those who followed him changed none of his prescriptions, up to the epoch when the discoveries of Valsalva, on the structure of the internal ear, gave a new direction to the therapeutics of the affections of this organ. That illustrious anatomist was the first to recognise that deafness proceeds, often, from the obstruction of the Eustachian tube. He perceived, also, that the cavity of the tympanum communicates with the cellules of the mastoid apophysis. This discovery was accidentally made. While injecting a carious condition of that bony eminence, he ascertained that the liquid passed into the esophagus. Cheselden several times observed that the hearing was but little, or not at all affected by the perforation of the tympanum.

These various observations led to the discovery of several ingenious processes, for the cure of deafness arising from some affection of the internal ear. The first effort made to this end, was by injection through the Eustachian tube. Anthony Petit, John Douglass, and other surgeons of the eighteenth century, recommend very highly this means. Jasser, a surgeon of the Prussian army, attempted to cure the deafness arising from the occlusion of the Eustachian tube, by trephining the mastoid process, and pushing injections through the cells, in which he succeeded perfectly. In fine, Sir Astley Cooper conceived the idea of perforating the tympanum, to replace the opening of the obliterated Eustachian tube; and he performed the operation, successfully, three times.

### OBTURATION OF THE AIR PASSAGES.

When the air passage is stopped by any obstacle, the anguish is extreme, the suffocation iminent, and the patient speedily dies, unless promptly succored. This accident has sometimes occurred in a violent quinsey, but more frequently in the fibrinous effusion in children, called croup. The Hippocratic works indicate as the only resource in this extremity, to pass a leek leaf, or any elastic tube, into the throat of the patient; but this agent is very difficult of application, and I doubt whether it was ever done advantageously. Asclepiades of Bythinia, had the idea of opening a passage for the air, by making an incission into the larynx or trachea; but the authors who report this fact do not describe

the operation he adopted. After him, no one dared attempt tracheotomy until Antyllus, who practiced it several times, and described his mode of operating. We owe to Paul of Ægina the preservation of this precious fragment. The Arabs, and the Latins of the middle ages had so little anatomical knowledge that they very much exaggerated the dangers of the operation, and, without condemning it absolutely in theory, abstained from its practice.

Anthony Benivieni, a physician of Florence, who lived at the end of the fifteenth century, saved the life of a patient by opening the trachea, and giving issue to the pus of an abscess that was formed within it. This is the first account we have of a tracheotomy, after an interruption of twelve hundred years; but its author does not state the manner in which he performed it, and it does not appear that he employed this method in other cases. Fabricius d'Aquapendente is the first among moderns who gives a detailed description of this operation. He proves that it may be executed without injury to any other important organ; and that by it, we may often save a patient from impending death. The invention of the canula has been attributed to him, which has usually been left for some time in the artificial opening thus made.

### DISEASES OF THE CHEST.

*Empyema.*—According to its etymology, the word signifies a collection of pus, formed in any part of the body. Many authors have employed it in this extended sense; thus they have spoken of empyema of the brain—the maxillary sinus, joints, etc. But a greater number, especially among moderns, use the word empyema, in a more restricted sense, only employing it to designate a purulent or aqueous collection, enclosed in a part of the thoracic cavity. This is the signification, also, which we give to the words. Thus we understand by the operation for empyema, an opening practiced through the parieties of the chest, to give passage to a liquid contained in one of its cavities.

We are astonished, in reading the Hippocratic Works, at the assurance with which they frequently repeat the advice to open the throracic cavity, to give issue to the empyema. It seems, from these works, that nothing was easier than to recognize the presence and seat of a liquid contained in the chest. Nevertheless, they do not always agree among themselves on the symptoms of that affection: thus, the author of the treatise on the Regions in Man, declares, that a patient affected with empyema expectorates purulent matter; while the author of the treatise on Internal Affections, asserts that there is no pus either in the substances expectorated or vomited. It is said in a passage of the second book on Diseases, that the patient cannot lie on the painful

side; and, in another passage of the same book, that he cannot lie on the sound side.

Apart from these small contradictions which may be blamed upon the copyist, the following are some of the signs given of thoracic effusion: when at the termination of a pleuro-pneumonia, which has existed for some time, or a penetrating wound of the chest, or a fluxion, the fever persists, with cough, expectoration, and oppression—and the patient feels pain in the side or flanks, and realizes an extreme lassitude—sweats on all parts of the body, with alternations of heat and cold, swelling of the feet, and hooked nails, there is every sign of the formation of an empyema. To assure yourself better and to know the precise point of collection, require the patient to be seated on a solid chair, and direct an assistant to hold his hands, then seize yourself both shoulders, and shake him, and listen, attentively, to ascertain from which side comes the sound of fluctuation. You will realize the same sensation as when you agitate a leather bottle containing liquid. When this sign is absent, which happens often, on account, either of the quantity or viscidity of the liquid, an examination must be made, to ascertain if one side of the chest is not more swollen than the other; and, in that case, the opening should be made a little below or in the rear of the tumor, as low as possible, without wounding the diaphragm. In fine, if we have to guide us neither fluctuation nor tumor, and, nevertheless, the symptoms of empyema exist, it is necessary to spread, on a cloth, potter's-clay, softened with warm water, and apply it to the chest; then, with a brush, dipped in some coloring liquid, mark the portion of the skin where the clay dries the soonest; this will mark the point where the pucture should be made.

Thoracic paracentesis is performed as follows: after having incised the skin with a scalpel, take a lancet having the blade wrapped nearly to the point, or a red hot iron, and plunge the instrument into the collection of pus, and let it flow in a small quantity. The opening must be closed with a tampon of charpie, fastened to a thread, which will serve to draw it out; the whole is to be supported by a bandage around the body. Twice a day the dressing is withdrawn, giving issue, each time, to a small quantity of liquid. When it is sensibly diminished, an injection is to be made of warm wine and oil, to prevent the lung, which is accustomed to humidity, from drying too quickly. The dressing is thus to be continued, twice a day, allowing the injection of the morning to flow out in the evening, and that of the evening to flow out in the morning. When the cavity furnishes but a very small quantity of humor, a curved metallic sound should be introduced every day, to

draw off what is collected. Sometimes, instead of incising an intercostal space, a rib may be perforated, with a trephine, which will allow, afterwards, greater facility for the use of the tampon. Galen cites the history of a child whose sternum he had trephined, to give issue to an abscess.

After him the operation for empyema was more and more neglected; neither the Greek physicians of the following ages, nor the Arabs, nor the Latins of the middle ages practiced it, except in extremely rare cases. But it began to be revived in the course of the sixteenth century. Fabricius d'Aquapendente recommends it as the sole resource that the art possesses against pleuritic inflammations with effusion—internal abscesses, penetrating wounds—hydro-thorax—in a word, against every species of liquid collection which cannot be evacuated directly by expectoration, the urine, or the stools. Being an enthusiastic partisan of the ancients, he complains that in his time thoracic paracentesis was not practiced as frequently as it had been under the Asclepiadæ. But perhaps they may be reproached for having practised it too often! The progress of surgery is not measured by the multiplicity of its operations; on the contrary, its greatest improvement consists in avoiding those which are useless or very dangerous. Now, that the diagnosis of empyema is carried to a degree of perfection much higher than among the ancients, as the result of the recent discoveries of auscultation and percussion, thoracic paracentesis is much less practiced than in the age of Hippocrates.

### DISEASES OF THE ABDOMINAL ORGANS.

*Wounds of the Abdomen and Intestines.*—Celsus is the first who traces the rules for the suture of the abdominal parieties and the intestines. He remarks as follows: When a wound has opened the abdominal walls, it often happens that the intestines escape. It is necessary in the first place to examine if the gut has been injured, and preserves its natural colour. If the small gut is wounded, there is no resource; but we may attempt to cure a wound of the large intestine by sewing together the lips of the wound." He also indicates a very complicated method to execute a suture on the abdominal walls, and like Galen, describes two others which differ from his, which in all make three methods of gastroraphy which have been transmitted to us by the ancients.

During the middle ages no improvement was made in the cure of abdominal and intestinal wounds. Some physicians conceived the idea of introducing into the wounded intestine, before uniting the edges of the wound, a tube of elder pith, in order to prevent the escape of the feces between the points of suture; but this odd procedure, and others

still more incredible, such as the bites of ants, were justly abandoned at the restoration of great surgery. There was a return to the plans of the ancients, which were modified in an advantageous manner, while at the same time new additions were made. Thus Stalpaart van der Wiel invented the method of establishing an artificial anus, and for the cure of wounds of the large intestine, and Peter Dionis generalised this plan.

PARACENTESIS ABDOMINALIS.

While the Asclepiadæ showed themselves empressed and bold to advise thoracic paracentesis, they on the other hand appeared to have a repugnance of paracentesis abdominalis. It is only recommended in a single passage of the Hippocratic writings, and in a very succint manner, the author simply says that a puncture of the abdomen must be made near the umbilicus, or in the rear, in the region of the flanks. An aphorism directed that but a small amount should be permitted to flow at a time, when an opening was made, either with the knife, or the actual cautery, in dropsy, or an internal abscess. This is all that is found in that antique collection, relative to abdominal paracentesis. It is shown, on the contrary, by a great number of physicians, that ascitis was regarded by the physicians of that epoch, as an affection entirely beyond the resources of art, and nearly always mortal, which is doubtless the reason why they so rarely had recourse to an operation, which they judged to be more injurious than useful, in such cases.

As to the other species of dropsy, anasarca, tumors of the liver and spleen, they advised in general to treat them by scarifications and cauterizations.

Celsus is much more explicit in what regards the diagnosis, or treatment of dropsies, of which he distinguishes three kinds, namely, tympanitic, leucophlegmatic or anasarca, and ascitis. After having described the characters, and the means of cure proper to each of these species, he says, on the subject of the last, that if the remedies employed to dry the bowels, and arrest the humor, do not produce the desired effect, it is necessary to evacuate the fluid in a shorter way, by making a puncture. Then, in another book, he describes in detail the method of making the puncture. He directs that the abdomen be incised at the umbilicus, even, or at four fingers width from the left side, with a narrow bistoury, and then, that a cannula, with a projecting and reversed edge, be introduced at the opening. That being done, a good part of the water is permitted to run out; then the cannula is plugged with a tampon, and is kept in its place by a bandage around the body. The next day the remaining water is gradually evacuated. There are surgeons, he adds, who withdraw the cannula on the first day, and who fix

in the opening a piece of sponge saturated with vinegar, or water. The next day the cannula is re-introduced, and the evacuation is completed.

During the centuries after Galen, not only were no improvements made on the rules given by Celsus, but rather a retrograde movement took place toward the practices of the Asclepiadæ, viz: they preferred cauterizations and scarifications to the paracentesis. This latter method did not come into vogue again till the fourteenth century. Mondini objected to its being practiced at the *linea alba*, because, he says, the tendinous nature of the structure here, makes the cicatrization more difficult, and often provokes spasmodic accidents. Fabricius d'Aquapendente believed that it could be executed at the umbilicus with less danger than at any other point. John Palfyn chose the middle of a line drawn from the navel to the left anterior superior process of the ilium, and this is to-day the point selected, when any particular circumstance does not require some other one to be chosen. At the same time much attention was paid to the improvement of the instruments employed in the operation. Sanctorius invented one which made much noise, because he kept it secret for a long time. It consisted in a round needle, contained in a cannula. It was in fact almost the same as our trochar. In short, we owe to two modern surgeons, and particularly to those of the last century, the knowledge of encysted dropsy, which had escaped the attention of the ancients. H. F. Ledran was the first to trace, in a precise manner, the diagnosis and treatment of this affection.

### HERNIA.

This word, in its vulgar and primitive acceptation, and it is that which we adpot here, signifies nothing more than a tumor formed by the displacement of some of the viscera of the bowels. Though the tumors of that sort may show themselves on nearly all parts of the abdominal surface, the ancients have only signalized those that appear at the groin, or umbilicus. They studied particularly the former, because they were most frequent, their diagnosis often obscure, and their treatment very difficult.

Celsus, who was the first to describe inguinal hernia, expresses himself in the following terms. "The peritoneum, which separates the intestines from the parts above the groin, is subject to be torn, either as the result of inflammation, or the effect of a violent blow: then the epiploon, or intestine, being drawn down by its own weight, becomes engaged in the opening, separating gradually the nervous tunics that envelope the testicle." In this manner the Roman encyclopedists explained the formation of inguinal hernia. The other writers of antiquity and of the middle ages, made no change in this explanation, and

it was only at an epoch very close to our own that the error was discovered and demonstrated, as we shall show presently.

In regard to its cure, Celsus advised to attempt it without using the bistoury, but he laid down no rule for the practice of the taxis. He contents himself by saying, after having returned the intestine, that it was necessary to retain it by means of a truss, which often provokes the adhesion of the membranes, especially in very young children. When it is necessary to use a sharp instrument, let it be done as follows: after having incised the first tegument of the tumor, the envelopes of the testicle must be dissected as carefully as possible, so as not to injure that organ; the herniated viscus is freed from its envelopes and returned to the abdominal cavity, through the peritoneal opening, which is enlarged as much as is needed. As the incision of the tissues goes on, it is necessary to tie the larger vessels. At the close of the operation the borders of the wound are brought together by some points of suture, and the threads are left to fall off of themselves, which takes place as soon as suppuration is established.

Celsus, as is seen, gives directions to have as much care of the testicle as possible. Paul d'Ægina confirms the precept of Celsus, and the Arabian writers only copy the Greeks on this subject; but they abstain from practicing the operation themselves; their natural repugnance to the employment of cutting instruments being fortified on this occasion by a misplaced modesty. They limit themselves, in the cure of this infirmity, to the use of agglutinative and astringent plasters. The surgeons of the middle ages established the absurd rule of tying, in these cases, the spermatic cord, and taking away the testicle.

Ambrose Paré brings back the treatment of inguinal hernia to sounder ideas. He proscribes the removal of the testicle, except in cases of gangrene or sarcocele only. Pierre Franco refutes the errors of the ancients, relative to the rupture of the peritoneum; he shows that ordinarily that membrane accompanies the viscera, when they emerge from the abdominal cavity, without rupturing it. From that time, the diagnosis and therapeutics of hernia acquired a precision which they had never before approached, thanks to the labors of a great number of surgeons, of the seventeenth and eighteenth centuries, among whom we may cite Jean-Louis Petit, Leblanc, P. Camper, Samuel Sharp, A. Louis, Percival Pott, Auguste Richter, Antoine Gimbernat, and A. Bonn.

### DISEASES OF URINARY ORGANS.

Among the very varied operations to which these diseases have given rise, up to this period, the gravest, undoubtedly, are nephrotomy and

cystotomy. The first is recommended in the Hippocratic writings, but the manner of executing it is nowhere described. The second, though less dangerous, is mentioned in only one of the works of that collection, and only to proscribe it. We read in the oath of Hippocrates, "I swear not to cut any person attacked with stone. I will abandon that practice to the mercenaries who devote themselves to it." Why did the Asclepiadæ, who did not hesitate to recommend the cutting into the kidney, show so much repugnance for cutting into the bladder, an operation less difficult and less fatal than the other? However this may be, the prejudice that excluded cystotomy from the domain of the Art, became extinct, or was very much abated in the school at Alexandria, since Celsus names two distinguished lithotomists of that school, Ammonius and Meges, whose methods of operation, as well as their intentions and curative views, he does not disdain to mention.

"We are sometimes obliged," he says, "to employ the aid of the hand, not only among men, but also in women, to press out the urine which is retained, either because the urinary conduit is diminished by reason of advanced age, or because there is some stone or clot of blood which stops the passage, or a slight inflammation, which often occurs, and stops the natural flow of the urine. To effect this, sounds, made of brass, are employed, and the surgeon must never have less than three for men and two for women, so as to be able to assist all persons, great or small. Since we have mentioned the bladder and stone, it would appear that this is the place to speak of the operation which we are obliged to practice on those who are attacked with stone, when a cure can not otherwise be effected: for no haste must ever be made to perform this dangerous operation, neither must it be executed at all seasons or ages, nor in all kinds of cases, but only in the spring, and on children from nine to fourteen years of age, and when the suffering is so great that, not yielding to other remedies, the patient is continually in danger of perishing."

After having thus presented the indications which establish the necessity of operating, Celsus describes, with great detail, the sole operative proceeding known in his time, and designated by moderns under the name of minor operation, *petit appareil.* His description has remained as a model, which the writers who followed him, whether Greeks, Arabs, or Latins, did in no respect change until within a period not far removed from ours. During the middle ages, cystotomy left the domain of the regular practice, and fell into the hands of men, strangers to medical science, who went from city to city, according to the expression of the times, to cut the calculous, (*couper les calculeux.*) Guy de Chauliac appears to have been the sole surgeon of that age who

dared attempt or advise such an operation, and he followed, literally, the method of the Roman encyclopedist.

About the commencement of the sixteenth century, John de Romani, surgeon of Cremona, and the Neapolitan, Mariano Santo de Barletta, made some changes in the old method; they added several instruments of their invention to those which had been employed up to that time. Mariano, having made known his changes in a memoir, *ex-professo*, the new method of operation was termed the method of Mariano, from the name of its author, or great operation, *grand appareil*, on account of its complication, and of the number of instruments that were employed in it. The family of Colot has given to France several lithotomists who became celebrated by the employment of the *grand appareil*.

About the time that Mariano published the details of his operation, another surgeon, a native of France, and residing at Lausanne, was led by necessity to the discovery of another procedure, more important still, and named, afterward, the high operation. We will let him tell himself the circumstances which led him, very much against his will, to open a new route. "I will recite," he says, "what happened to me once. Desiring to take a stone from a child of about two years of age, but finding a stone nearly of the size of a pullet's egg, I did all I could to withdraw it downward, and seeing that I could not advance it with all my efforts, and that the patient was excessively tormented, and also that the parents, wishing that he might die, rather than live in such a condition, joined, also, to the feeling that I was not willing to bear the reproach of not being able to take it away, (which was very foolish in me) I deliberated, with the importunity of the father, mother, and friends, to cut the child above the os pubis, inasmuch as the stone could not descend downward. He was cut over the pubis, a little to one side, for I held the stone there with my fingers, which were in the fundament, and it was also held on the other side by the hands of an assistant, who compressed the little belly, above the stone. I then extracted it, and the patient was cured, though he was very ill, and the wound consolidated."

Notwithstanding this result, the method imagined with so much success by Peter Franco, remained in obscurity until in the year 1580, when Francis Rousset attempted to revive it, and argued that it presented no more inconveniences than the others, and had several advantages above them. Nevertheless, his argument did not succeed in establishing the operation above the pubis, as the common operation, but only as one that might be employed in rare cases. John Douglass, a celebrated surgeon of the eighteenth century, was the first who

employed, habitually, the *high operation*, in preference to the other methods.

A man, whose complete defect of anatomical knowledge would exclude him from the practice of surgery in an enlightened age, named Baulot, or Beaulieu, better known under the name of Friar James, enriched science with a process of cystotomy which is not behind any of the preceding, and is designated as the *lateralized method*. The Hollander, Raw, being initiated by him into this method, employed it with extraordinary success; but he dishonored himself in not communicating it to any one, and carried the secret to his grave. After his death, a crowd of surgeons, desirous of discovering the lost secret, devoted themselves to researches which were not fruitless. On one hand, William Cheselden resuscitated the *lateral method*, and after having added several improvements, gave it a perpetual existence, by the description which he published;* on the other hand, Peter Foubert invented a new method, which has taken rank in science under the name of the *lateral method*, and which Thomas, surgeon-in-chief of Bicêtre, adopted the first, and modified it.

Thus, to a single method, which the ancients transmitted to us, the moderns have added, before the close of the last century, four others, each of which presents particular advantages and disadvantages; so that the man of art may accord his preference to either, according to circumstances and the occasion.

### DISEASES OF THE GENITAL ORGANS IN MAN.

*Hydrocele.*—Celsus was the first who treated of this disease, which he described very imperfectly, under the name of aqueous hernia. He advised the excision of the organs, in order to evacuate the liquid, and to wash the wound afterward in a salt of nitre. Galen employed the seton to cure the same disease, the diagnosis of which he did not establish in a manner more explicit than Celsus. Leonidas of Alexandria described hydrocele with more exactness; he endeavored to fix the characters which separate it from sarcocele, enterocele, and epiplocele. Paul of Ægina first distinguished dropsy of the tunica vaginalis, from infiltration of the cellular tissue. He treated both, either by excision or cauterisation. Albucasis preferred the actual cautery to excision; nevertheless, he also taught the manner of evacuating the water with a trochar, or to excise the sack, when there was one.

Thus, at the epoch of the revival of letters, four methods of treating hydrocele were known, namely, excision, the seton, cauterization, and

* Treatise on the High Operation for Stone. London, 1723.

puncture. The moderns have added a fifth, stimulating injection after paracentesis, the first mention of which was made by Alexander Monro. Besides, they have determined much better its seat, and the various characters and species of the disease.

*Sarcocele*, or cancer of the testicle, is the only disease which requires the sacrifice of the organ of virility; but this terrible operation was formerly much more employed. Celsus, who first names it, enumerates three species of tumors which require its employment, namely: circocele, or the varicose dilatation of the spermatic cord, sarcocele, and violent inflammation of the testicles. In the course of time, the supposed necessity for the operation was not even thus limited; it was extended, as before said, to hernia; recourse was also had to it in the treatment of elephantiasis, leprosy, gout, and even mental alienations. There was a time when ignorance and cupidity, united, seemed to have determined on the destruction of the reproductive organs in man. These pretended curers overspread the country, and, for a moderate sum, castrated children, under the pretext of curing them of hernias which they did not have, or which they might have been rid of without this odious mutilation. The abuse was carried to such an extent that the Royal Society of Medicine became excited. In 1776 it named a committee to make a report on the subject, and devise means to put a stop to this prodigality of mutilations. It was shown that in the diocese of Saint Papoul alone, more than five hundred little boys were cut by the audacious charlatans, who received thirty-five livres for every operation of that nature. Haller assures us that in the Swiss cantons, there existed, in his time, a number of men deprived of testicles for the same cause. Let us felicitate modern surgery for having reduced the necessity of castration to excessively rare cases.

Though we have limited ourselves to present the history of this operation in a medical point of view, it is proper to say that long before science had dared avail herself of this extreme resource, in diseases deemed incurable, human passions, politics, jealousy and vengeance, had invented this cruel means, and had not hesitated to exercise it on a grand scale. Eunuchs were common in Egypt, Assyria, and other countries of the East, even before Moses, while castration, as a therapeutic resource, was not employed till after Hippocrates. But do the passions count the sufferings, or even the lives of men as anything, when they wish to gratify their ends? The custom of mutilating young boys to preserve their tone and extent of voice, which is lost at puberty, was kept up in Italy to a recent period, notwithstanding the denunciation of both religion and the laws; and avaricious parents have been known to offer their children to this degradation.

### DISEASES OF THE ANUS.

A single one of these diseases, the anal fistula, demands special aid from surgery. We are astonished in reading the little Hippocratic treatise relative to this affection, at the exactness with which the treatment it requires is there traced. The most of the curative means now advised in such circumstances, are there already enumerated; and the writers of later periods, until the period of the revival of learning, added very little to the details furnished in this monograph, which is one of the most precious treatises of Hippocratic surgery.

### DISEASES OF THE MEMBERS.

*External Aneurisms.*—Aneurisms may exist in all parts of the body, but they are not susceptible of surgical treatment except when seated in the members; and it is on this supposition only that we take it up. Before the anatomical discoveries of the Alexandrian school, only inexact and erroneous ideas could be held on the subject of aneurisms. At that time the arteries and veins were confounded together; and when they were known to be distinct, the arteries were supposed to contain air, and not blood. Celsus was not ignorant that the arteries contained blood, for he affrms that a wounded artery does not cicatrise, and sometimes allows the blood to escape with great violence; but he makes no mention of the morbid dilatation of that order of vessels. Philagrius is the first who has spoken of it, and who has indicated the means to remedy this accident. That bold surgeon passed a ligature above and below the tumor; then he excised it and filled the wound with medicaments, to establish supuration. Antyllus employed, equally, the double ligature; but instead of excising the tumor he was contented with emptying it of the clot of blood which it contained, and filling up the cavity with materials to promote supuration. In fine, in the fifteenth century John de Vigo conceived the plan of treating aneurismal tumors by gradual compression and styptics. Nothing has been added since, to the modes of treatment we have just enumerated; on the contrary, excision has been abandoned as always useless, and often dangerous; but great improvements have been made in the manner of executing the ligature and compression, as well as everything that belongs to the diagnosis of the disease.

### ON AMPUTATION OF MEMBERS.

A multitude of circumstances may demand the necessity of having recourse to this melancholy resource—the last of all, but sometimes the only one to save the life of the patient; nevertheless. there is only one allusion made to it in the Hippocratic writings, which is in the following

terms: "When, as the result of a fracture, gangrene with discoloration supervene suddenly, the whole body perishes. If the bone has been taken off, the flesh which must fall is promptly separated; but if the bone remains sound, though the flesh quickly falls, it exfoliates slowly where it has been left uncovered by the gangrene. Everything must be removed from the articulation, above the gangrene, having care not to touch any living part; for if the operator touches that which is sensible, in cutting a part which is not entirely dead, the patient is exposed to pains which produce sometimes their death." It is easy to see by this passage, even, that the complete amputation of a member, of both flesh and bone, was rarely, if ever, practised among the Asclepiadæ: for they were not ignorant that it was less the pain than the hemorrhage or inflammation that causes patients to perish. But what most proves how little skillful they were to practice amputation, is, that they make no mention of this surgical means even where it would be most indicated. It was probably the surgeons of Alexandria who dared the first to attempt this grave operation. Celsus counseled it in cases where gangrene attacks a member without having also attacked the trunk, though he avows that there is extreme peril in doing it. "But," he adds, "when it is the only resource, there must be no hesitation about employing it, whatever uncertainty may accompany it." He also recommends that the amputation be made between the dead and the sound parts, in such a manner as to affect much more the latter, and always keeping as far as possible from the articulation. When the bone was reached, he advised to saw the bone as high as possible, so that more flesh would remain to cover the stump.

The method of great amputations received but few modifications in the centuries of decadence which followed. As the most immediate danger in all these cases is always from hemorrhage, it was conceived best, in order to avoid it, to cauterize the stump with a red-hot iron, with boiling pitch, or other escharotic substances. But there resulted from these methods, as may well be supposed, atrocious pains and fearful inflammations, which must have carried off most of the patients, and disgusted, likewise, the operators. It was on this account that Guy de Chauliac recommended to let the part fall off itself, rather than recur to the operation.

A new era dawned on this capital branch of surgery, when A. Paré substituted the ligature of the arteries for cauterization, in the first dressing. From that epoch successive improvements were introduced both in the mode of operation, as well as in the consecutive treatment. There was much discussion, also, on the dangers and advantages of immediate or deferred amputations. At the head of the surgeons who

concurred in these improvements, and took an honorable part in those great discussions, I will cite D. Anel, Jean Louis Petit, H. F. Ledran, Anthony Louis, Ulric Bilguer, Brasdor, Benjamin Bell, Peter Joseph Desault, and John Hunter.

ON ORTHOPÆDIA.

The first who wrote a special treatise on this branch of surgery was Nicholas Audry, who defined it an art to correct the deformities of the body, in young subjects. That definition is clear, conformable to etymology, and seems to us to indicate well the end that is proposed in this branch of the Art, and we therefore think we cannot do better than retain it. We find in the most ancient books of Medicine some traces of orthopædia, and notably in the Hippocratic treatise on *Articulations*, where we read, among others, the following passage: "There are also some congenital luxations which, if the displacement is small, are susceptible of being reduced, especially those that affect the articulations of the feet. The natural club-foot of birth is curable, in most cases, when the deviation is not very great, and the child is not too old. The best way is to treat the deformity as speedily as possible—before the bones are greatly diminished and the flesh is greatly reduced. There is not only a single species of club-foot—there are several of them; but the greater part are not complete luxations, but deviations of the foot inward, and retained by some means in a constant position. The following points are necessary to observe in the treatment."* The author then traces, with much detail, the curative method in these deformities.

All the surgical works which have been written since, include some fragments relative to the same subject; but these documents disseminated in the midst of other subjects, in various chapters, do not form, in any respect, a body of doctrine. Before the last century, no one had dreamed of extracting them and uniting them, with special reference to orthopædia; it was then a rare and happy idea to call the attention of practitioners to this special object, which must sooner or later contribute to the physical perfection of the human species. Though the work of M. Andry, which was the most important that was published in the course of the eighteenth century, contains the usual imperfections of a first essay, it is not without merit at the present time; for it contains judicious precepts—observations full of sagacity, though occasionally in contact with prejudices and errors, often ridiculous. We will also point out, as worthy of being consulted, the works of Levacher de la Feutrie, J. Venel, Anth. Portal, etc.

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* Œuvres d'Hippocrate, by Littré—on Articulations.

## CHAPTER VII.

### OBSTETRICS.

We have seen that the art of accouchement remained very much in the rear of other branches of surgery, notwithstanding the very estimable efforts of some surgeons, to draw it from the state of abjection in which it vegetated. But a very particular cause was an obstacle to its progress. The most of the women employed in childbed, were ignorant old matrons, who, attached to their old routine, which had been followed from time immemorial, repelled all innovation. Accoucheurs were called in extraordinary cases only, where, from the grave and urgent circumstances, they could not acquire, except with difficulty, the expeperience that inspires useful reforms. However, the prejudices that excluded them from the practice of midwifery, gradually gave way, and a new era opened for obstetrics.

In the beginning of the seventeenth century a *sage-femme*, Louisa Bourgeois, called Boursier, *sage-femme* of Marie de Medicis, made an exception to the common rule, by publishing a collection of observations,* in which we meet with several new ideas.† Finally, the art of accouchements came forth from its beaten path, to assume a reform truly scientific, based on rational principles, when Francis Mauriceau, accoucheur-in-chief of the Hotel Dieu, in Paris, published his treatise on the diseases of pregnant women, and those in childbed, which was a complete and methodic collection of the observations derived from those who had preceded him, with those which his own extended practice had furnished. The first edition of this work appeared in 1668. It was translated into nearly all the languages of Europe, and powerfully contributed to vulgarise sound obstetrical doctrines. The way once opened, a crowd of competitors came forth, and by their labors enlarged it very much. In that number we particularly distinguish Paul Portal, Deventer, Peu, Amand, and Delamotte, who were cotemporaries, and formed the transition from the seventeenth to the eighteenth centuries.

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* Observations diverses sur la Sterility, Perte de Fruit, Fécondité, Accouchement, et Maladies des Femmes, et Enfants nouveau—nés. Paris, 1609 or 1626.

† We will mention, also, as forming an exception to the common rule in these latter times, two women, whose works are marked by sound observations: Madame Lachapelle, sage-femme in chief of the Maison d'Accouchement of Paris (*Pratisque des Accouchements, Paris*, 1825;) Madame Boivin, *sage-femme* in chief of the Maison Royale de Santé. (*Memorial de l'art des Accouchements*, Paris 1836, 4th Ed. *Traité des Maladies de l' Uterus*, Paris, 1833).

About this time, the Chamberlains, a family of English practitioners, who devoted themselves exclusively to the practice of accouchements, invented an instrument to facilitate the extraction of the head, when it was arrested in its passage. One of them, Hughes, came to Paris to try his instrument, but not succeeding in a difficult case, he passed on to Holland, where he obtained more success. Two accoucheurs of that country, Roonhuyson and Ruysch, bought his secret, which they kept too faithfully for the sake of their own memory and humanity. But in 1721, a surgeon of Gand, named John Palfyn, in seeking to discover the secret of the Chamberlains, conceived the idea of contriving a *tire-tête* (literally, a head-drawer,) composed of two steel spoons. He hastened to publish it, and merits, by this very praiseworthy act, the title of first inventor of the forceps. His *tire-tête*, advantageously modified by Smellie, of England, and Levret, of France, has taken rank under the name of forceps, among the most useful discoveries of modern surgery. It has rendered much less frequent the employment of crochets, and murderous instruments, and although it has not come into common use, only within a hundred years, we can say, without exageration, that it has already saved the lives of a multitude of women and children.

During the eighteenth century obstetrics advanced in several respects to a degree of perfection similar to that of the exact sciences, by the concourse of a great number of distinguished surgeons, who occupied themselves in its study, in a special manner. It is impossible to mention here the names and titles of all those who rendered some service to this branch of art; we shall mention in first rank, Levret and Smellie; then, Puzos, Burton, Rœderer, Denman, Stein, Deleurye, Saxtorph, Solayrés, and his disciple J. L. Baudelocque, the most celebrated among the last mentioned.* While the art became more perfect, establishments

* Baudelocque was not only the most renowned accoucheur of the close of the last century; but he recommends himself to us, also, by his grateful recognition of the instruction received from his medical preceptor, as follows: "if a large number of men, in perpetuating by their writings the art of Midwifery, have rendered great services to the race, there is also a large number of others whose knowledge, so to say, has been buried with them, and to whom society would have been no less indebted, if their incessant labors or premature death, had not prevented them from publishing the fruit of their toil and experience. There is one of these latter, of whom the recollection will perpetuate unceasingly our regrets, and to whose memory we shall always pay with pleasure the tribute of gratitude we justly owe him: I mean Solayrés. It is less the man, whom we esteemed, and whose death we regret, than the loss of that profound knowledge of the art which he cultivated, and which he taught among us with the greatest distinction. What I have been able to collect of his doctrines, will not compensate for his loss, because a man cannot transmit his genius with the knowledge he had acquired." L'Art des Accouchements, p. 10. 3d edit. 1796.

destined to propagate its lights and benefits, were multiplied. There were erected in all the capitals of Europe, and in other cities, practical schools of accouchements, where a crowd of pupils of both sexes entered, to receive from skilful masters sound obstetrical doctrines. These young accoucheurs—these new *sage femmes*—spread afterwards in the most remote provinces the excellent precepts which they had acquired, and combatted with success the time-honored prejudices of ignorance.

To better appreciate the progress effected in obstretrical science during the Reformative Period, we will examine successively some of the capital points of the science.

### PREGNANCY.

In order to recognize a state of pregnancy, the ancients had admitted a mass of insignificant signs and ridiculous practices, in the midst of which we find symptoms of a real value, such as the augmentation of the volume of the uterus, the movements realized by women, in the womb, the cessation of the menses, the developement of the mammæ, and the secretion of the milk. This collection of signs constitutes, doubtless, a strong presumption of pregnancy, if not a certainty: but it is rare to find them all associated in the same person, so that in the greater number of cases, the ancients could only arrive at a probability, more or less great. Moderns have added to the preceding symptoms, other signs, by means of which we may reach much sooner, and more certainly, the recognition of the state of pregnancy: these signs are, first, those obtained by the vaginal touch, which have a great value; secondly, those furnished by auscultation, which has been recently applied to this subject.

### NATURAL LABOR.

The ancients were entirely ignorant of the relation that must exist between the dimensions of the head of the infant, and the pelvis of the mother, so that the labor might terminate by the sole forces of nature; neither had they any but false and vague ideas on the mechanism of this function, and the true agencies that concur to effect it. They believed for example, that the expulsion of the fetus was due to its own efforts, which it made in order to get clear of its envelopes: while it is now well known that in the act of parturition the fetus is entirely passive, and that its expulsion from the womb of its mother is determined principally, by the contractive action of the uterus and abdominal muscles. The ancients also imagined that the head engages in the pelvis in a transverse position: when the most simple inspection of the parts suffices to show that this is not the case. In fact it is necessary that the head, as it advances in the pelvic excavation, execute a spiral

movement of nearly a quarter of a circle, so that its smaller diameters shall constantly correspond to the least ones of the osteo-membranous canal. The knowledge of these particulars, and a multitude of others, is not, as may be supposed by those who are strangers to the art of accouchements, a pure speculative knowledge; so far from it, it is on the contrary an indispensable knowledge, to enable the accoucheur to keep himself unceasingly acquainted with the progress of the parturition; that he may be able at each phase of labor to appreciate with exactness the nature of the obstacles which retard or arrest the accomplishment of this function.

### DIFFICULT LABOR.

The death of the infant in the womb of its mother, or its extreme feebleness, constituted, in the eyes of the ancients, a very grave accident, which they regarded as an insurmountable obstacle to the natural termination of the accouchement, as the result of the opinion they entertained, that parturition depended on the efforts of the fetus. Consequently, they did not hesitate, in this juncture, to employ crotchets to extract the infant, an operation always fatal to it, in case it still retains vital manifestations, and which is not without danger to the mother. Experience, and a better theory of the mechanism of parturition, have demonstrated that the death of the fetus opposes no great obstacle to the accomplishment of this act—that it obstructs it only a little, and this circumstance by itself could never justify the employment of murderous instruments.

Hippocrates considered the presentation of the feet, also, as excessively dangerous, and he advised recourse, in such a case, to various maneuvers which would have a tendency to bring the head again to the straight—maneuvers nearly always fruitless, and very often injurious. Moschion, a celebrated accoucheur of the second century of the Christian era, Celsus, and Paul of Ægina, appreciated better the inconvencies of this position; they regarded it, truly, as much less advantageous than that of the head, but not as opposing an insurmountable obstacle to the spontaneous termination of the accouchement. In the presentations of the shoulder, and other parts of the trunk, the same accoucheurs established the principle, that it was necessary, in the first place, to endeavor to bring the head to the passage, and if that could not be done, to search for the feet, and take away the fetus by that extremity.*

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* Paul. Ægin., lib. III, cap. LXXVI.—Aëteus, Tetr. IV, serm. 4, cap. XXIII.—Cels. lib. VII, cap. XXIX.

The moderns, finding that the efforts made with the view of bringing the head again to the straight, are scarcely ever successful, and that they were not without danger, both to the mother and the fetus, have given the formal precept to get hold of the feet in all the presentations of the trunk, and terminate the accouchement by the hand. They prescribe the same plan whenever a hemorrhage or convulsions impose the necessity of hastening the labor.

When the head, engaged in the excavation of the pelvis, no longer advances or recedes, on account of the inertia of the uterus, or the general exhaustion of the forces of the mother, the forceps now offers a precious means for her delivery, without compromising the life of the child; while, before the invention of that instrument, the accoucheur was compelled to pierce the cranium, and afterward make extraction with a crotchet. Recourse, however, in such a case, could be had to symphyseotomy, if the narrowness of the inferior straight would not permit to act efficaciously with the forceps.

Lastly, though the Cesarian operation had been known from the remotest antiquity, it does not appear that it was practiced on the living, in the earliest times. It was an extreme resource, which was only resorted to on women who died in the act of labor; in fact, a Roman law, attributed to Numa Pompilius (*lex regia,*) prescribed that all women should be opened who died while pregnant, so as to save the infant if possible. The first authentic example of hysterotomy executed on a living woman does not go further back than the fifteenth century of our era, as we have before remarked. When a vice of malformation of the pelvis, or an extraordinary volume in the fetus, rendered its passage impossible through the natural passages, the ancients knew no other expedient than to cut the infant in pieces in the womb of its mother, and withdraw it in sections. The moderns have dared, in such cases, to attempt the Cesarian operation, and have sometimes succeeded in saving the lives of both mother and child.*

### THE PLACENTA.

The Asclepiadæ had very well felt the importance of this last period of the accouchement; their books allude to it in more than one place, but in the midst of a crowd of useless or odd remedies, which they recommend as proper to procure the evacuation of the after-birth; the following proceeding only, is worthy of notice. Place, they say, the

* See observations of MM. Professors Stoltz, (Mémoires de l'Académic Royale de Médicine. Paris, 1836); P. Dubois, (Bull, de l'Academie Royale de Médicine, vol. III, p. 694, vol. V. p. 25.)

woman on a chair with a hole in it, or if she is too feeble, lay her in a bed very much inclined; then place the child, which is still connected with the umbilical cord, on recently carded and very soft wool, so that its weight shall draw gently, and without a jerk; or better still, have two leather bottles full of water, tied together, cover them with wool, and lay the child upon them; then pierce each with a small instrument, so that the water shall slowly run out, and the weight of the child be thus gradually made to draw upon the after-birth.*

Celsus, to fulfil the same indication, gives much more simple and rational directions. "The physician," he says, "should give the infant in charge of an assistant; then he should make moderate traction on the umbilical cord, with the left hand, so as not to break it. If that does not suffice, he must carry the right hand along the umbilical cord to the after-birth, detach the vascular and membranous connections which unite it to the body of the womb, and then withdraw it entire, as well as the clots of blood which may have accumulated in the uterine cavity." †

The accoucheurs who followed Celsus have all repeated the precept which we have just transcribed; but the moderns only have completed it, in pointing out the cases in which it is necessary to hasten the delivery of the after-birth, and those where it is proper to delay; and in indicating the course to be pursued when there is an hour-glass contraction, or the umbilical cord is ruptured.

## CHAPTER VIII.

### LEGAL MEDICINE.

If, with Fodéré, legal Medicine be defined, the rational application of all physical, natural, and medical knowledge to the execution of the laws, and the conservation of public health, there is no doubt but that the history of the ancients would offer us numerous examples of this species of Medicine. We have already signalized remarkable examples of it in the legislation of the Egyptians, the Hebrews, and other celebrated nations of antiquity. The old Roman laws, attributed to Numa Pompilius, and designated by the title, *Leges Regiæ*, contained also a very judicious application of the physical knowledge of the times, in

* Traité de la Superfétation. Also, De la Nature de la Femme. Maladies des Femmes.

† Lib. II., cap. XXIX.

several of their enactments relative to testaments, to the separation of the spouse, to the nullity of marriages, to abortion, to the presumption of survivorship, etc. But it seems to me that such a definition embraces too many objects, and that medical science, considered, as has just been said, in all the application that can be made of it, by governments, to the public health, has been better denominated by recent writers, *political Medicine.* Consequently, we shall define legal Medicine, with some jurist physicians of great reputation, *the whole of medical and physical knowledge proper to enlighten magistrates in the administration of justice.*[*]

The custom of summoning physicians into the sanctuary of justice, to enlighten the magistrate on certain questions which require special notions in physics and in medicine, does not go back to a very ancient epoch. Fodéré, from whom we borrow nearly all the substance of this chapter, says that it commenced under the first Christian emperors, and that it owes its origin to ecclesiastical authority. Charlemagne confirmed afterwards what Justinian had prescribed. He ordered, in his Capitularies, that in the questions that pertain to man, *the judges shall support themselves on the advice of physicians, and that the visits, as well as the reports, be made by men recognized as masters in the Art, and of high moral character, by intelligent jurors acquainted with matters belonging to the case.* The tribunal of Châtelet appears to have been the first which comprehended the utility of consulting with expert physicians, whose knowledge they could invoke whenever they felt its need. An edict of Philippe le Bel, of 1311, qualified Master John Potard with the title of sworn surgeon of Châtelet.

Nevertheless, legal medicine was not yet, at that epoch, but in a rudimentary state. It was composed only of a small number of principles, disseminated in the general treatises of medicine or surgery, and obscured by many prejudices. There were connected with the tribunals sworn *sage femmes,* as well as sworn physicians. Laurent Joubert cites, in his *Recuil des Erreurs Populaires,* three reports of *sage-femmes,* relative to accusations of violation and defloration. The reports—one prepared at Paris, another at Bearn, the third at Carcassone—agree among themselves in pointing out certain lesions, as indicating violent attempts upon chastity. The author concludes that the opinions of the experts of his time was unanimous on these points; but he does not hesitate to combat that opinion in discussing in succession the pretended signs

[*] See Prunelle's Discourse before the Faculty at Montpelier, 1814; Orfilla, Leçons de Médecine Légale, t. I., lec. 1. Dict. de Médecine., in 21 vols., art. Médecine Politique.

alleged in the reports, and he demonstrates, from the most respectable authorities in Medicine, that they are superficial or false. The following is one of the reports alluded to, by which we may judge of the value of the others.*

The constitution published by the Emperor Charles V., in 1552, gave great importance to Legal Medicine, by extending, and determining much better than had been done before, its attributes; that legislator, treated, in detail, questions of infanticide, wounds, poisoning, abortion, and he mentions the means proper to be employed, to establish these sorts of crimes. He requested that medical men commence to establish, in a positive manner, what was the sum of the offense; and he traced the rules for drawing up reports of cases tried in the courts. The one hundred and forty-seventh article of that constitution prescribes a public examination when a questionable hurt is followed by death, if the death was really the necessary effect of the wound; or, if it proceeded from some other cause, as, for instance, negligence, or bad treatment, etc. Several ordinances of the Kings of France contain analagous sections; notably, that of Henry III, dated 1570.

At the beginning of the seventeenth century, Fortunatus Fidelis, having drawn together all that had been written on this matter, published the first special treatise on Legal Medicine. From that time this branch of science had a separate and distinct existence, and rapidly increased. Paul Zacchias, physician to Pope Innocent X., contributed very much to its extension, by making public his Medico-legal questions, which enjoyed, for more than a half century, a universal reputation, and still preserve, notwithstanding the incessant progress of physico-natural sciences, a part of their interest.†

* "Nous Marion Teste, Jane de Meaux, Jane de la Guigans, et Magdeleine de la Lippue, matrones jurées de la ville de Paris, certifions á tous qu'il appartiendra que, le 14e jour de juin 1532, par ordonnance de M. le prévost de Paris, ou son lieutenant en ladite ville, nous sommes transportées en la rue de Frépaut, où pend pour enseigne la Pantoufle, où nous avons vu et visité Henriette Pelicière, jeune fille de quinze ans ou environ, sur la plainte par elle faite à justice, contre Simon le Bragard, duquel elle a dit avoir été forcée et déflorée. Le tout vu et visité au doigt et á l'œil, nous trouvons qu'elle a: 1. les barres froissées, 2. le baleron démis, 3. la dame du milieu retirée, 4. le ponnant débiffé, 5. les toutons dévoyés, 6. l'enchenart rétourné, 7. la babolle abattue, 8. l'entrepont ride, 9. l'arrière-fosse ouverte, 10. le guilloquet fendu, 11. le lippon recoquillé, 12. le barbidant tout écorché, 13. tout le lipandis pelé, 14. le quillevard élargi, les balunans pendans: le tout vu et visité feuillet par feuillet, avons trouvé qu'il y avait trace de v.. Ainsi nous dites matrones, certifions être vrai, á vous, M. le prévost, au serment qu'avons á ladite ville." (1re partie, liv. v. chap. iv.)

† Quæstiones medico-legales. 1re Ed., Amsterdam, 1651. This work had a great number of Editions.

Legal Medicine does not constitute, rigorously speaking, a particular branch of science; it is nothing else than the special application of the light furnished by it, to the clearing up of certain judicial questions. But this special application requires to be well directed, a tact and skill which all practitioners cannot possibly acquire; and, even a knowledge of laws, to which they are often strangers. On that account, several Kings of France, Henry IV. and Louis XIV. among others, established, in all the communes and principal cities, royal sworn physicians, charged to make the report in legal trials. "This establishment," says Fodéré, "did not do all the good that it promised, because it was stricken, from its birth, with a mortal disease, the venality of officers!" Nevertheless, this philosophic writer does not hesitate to express a desire to see re-established in our days, a similar institution; but, free from the original vice that reproached it.

Among the legal physicians of the eighteenth century, whose writings have contributed most to advance science. I will particularly mention John Bohn, professor at Leipsic; Michael-Bernard Valentin, professor in the University at Halle, and one of the most distinguished sectators of Stahlism; Herman Frederic Teichmeyer, professor in the University at Jena, who had A. Haller for a pupil and a son-in-law; Oliver Mahon, professor in the School of Paris; John Daniel Metzger, professor in the University at Kœnigsburgh, J. P. Frank, and many others; but, above all, the *Savan* from whom we have borrowed the greater part of the ideas emitted in this chapter.

## CHAPTER IX.

### CLINICS.

We have heretofore said, that two modes of clinical instruction may be pointed out, namely, oral and written. In the first, the patients are put under the observation of the students, who observe, for themselves, the symptoms, the course and termination of the diseases, as well as the effect of the remedies prescribed by the professor. This is clinical instruction properly said, such as was practiced in the sacerdotal families of Egypt and Greece, who were devoted to the worship of Esculapius and such as it exists now, in all the faculties and schools of Medicine. The second method of clinical instruction consists in the observation, or the histories of diseases, gathered at the bed-side of the

sick, with all the details of treatment, and published afterward, both for the instruction of pupils and the advancement of science. These kind of clinical repertories are, indeed, of great utility. The nosologist may, and must draw from them the natural characters of the morbid species he describes; the therapeutist finds there, also, models of treatment for each disease, which enables him to deduce the general and particular rules of his art. Thus the facts of daily practice, observed with attention, and traced with fidelity, serve to constitute and develope science: science, in its turn, presents, in abridged formulæ, the summary of the experience of all ages—directs the practitioner with greatest certainty, from day to day—spares him infinite gropings, and deplorable errors.

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### § I. Oral Clinical Teaching.

We have already stated why this mode of instruction, the most efficacious of all, and the best to form excellent practitioners, was maintained in the Asclepidean families, particularly in that of Cos, till the foundation of the school at Alexandria, and why it was afterward abandoned, to be revived only at an epoch very close to our own. Some erudites have thought that they have discovered traces of clinical teaching in the histories of the Arabian Universities, and cite, in support of this opinion, a passage of Ali-Abbas, in which that author assumes to have collected at the bedside the most of the descriptions of diseases which he reports; and in another passage, where he recommends young physicians to frequent the hospitals. But the presence of a few pupils during the visitations and consultations of the physicians of a hospital, constitutes no more clinical teaching, than the practice adopted by some practitioners of antique Rome, to train after them in the streets, and in the houses of their clients, a group of men of every class, whom they decorated with the title of disciples.

The first essay in clinical teaching, of which the history of medicine makes mention, since the dissolution of the Asclepidean schools, occurred in 1578, at the hospital of St. Francis, in Padua. The professors, Albert Bottoni and Mark Oddo, had charge of it: one had the female, the other the male ward.* We are ignorant whether this mode of instruction was continued, after them, but we are led to think it was discontinued, from the fact that none are named as their immediate successors. About the commencement of the seventeenth century, Otto de Heurn, professor of practical medicine in the University of Leyden, introduced the practice of giving bedside instruction. Francis of Lebö,

* Comparetti Saggio della Scuola Clinica nello spedale di Padova. p. 6. Thomasius, De Gymnasio Patorino, lib. iv., p. 420.

called Silvius, who succeeded him, adopted the same plan; his clinical lessons had great repute, and drew a numerous concourse of auditors from the year 1658 to 1672, which has caused him to be regarded as the founder or restorer of this mode of teaching.

Notwithstanding the *éclat* of this innovation, and its well recognised utility, the successors of Sylvius let it fall into disuse. Clinical instruction ceased to exist for more than forty years, till the epoch when Hermann Boerhaave, already invested with several functions in the University of Leyden, was charged also with the duties of the chair of practical medicine. The illustrious professor conceived at once what advantage must accrue to the students, if the teacher made an application, in their presence, of the principles he had inculcated. Though the hospital at Leyden offered few resources for clinical teaching, on account of the small number of beds it contained, Boerhaave made such good use of them, that very soon auditors came to his course from all parts of Europe. His renown, which was already great, for he had published his two principal works, the *Institutes*, and *Aphorisms*, became immense. Persons came to consult him, from the most distant countries. He was in correspondence with several sovereigns, and even with the Pope, though he was a Protestant. Finally, he received, on a memorable occasion, a very touching testimonial of the regard of his fellow-citizens. A disease having forced him to interrrupt his teaching for six months, the first day of his convalescence was celebrated by a general and spontaneous illumination.

Now, if we seek to ascertain the real merits that recommend this illustrious man to the admiration of posterity, we shall find them clearly deduced in the following passage from one of his biographers. "Boerhaave," he says, "exercised during his life, and long afterward, an immense influence in medicine. Inferior in genius to his cotemporaries, Frederick Hoffman and Stahl, he had a reputation more universally diffused, and his doctrines have long prevailed over those of his rivals. He owed this advantage to the *éclat* of his teachings, and the brilliant qualities of his mind. Endowed with activity and rare facility, he acquired the most varied and extended knowledge. He formed from this a system, united in all its parts with infinite art; presented in his lectures and in his works with method, clearness, precision, and embellished with an uncommon grace of elocution, it acquired, as may easily be conceived, universal commendation. This system, which may be considered as a veritable Eclecticism, is made up of some ideas of Thémison and the ancient Methodists, of those of the medico-chemist Lebö, and especially of the mechanical theories of the iatro-mathematicians, toward whom his taste, and his studies in the mathematical sciences,

naturally carried him. The latter theories are predominant, which have justly caused Boerhaave to be ranked among mechanic physicians. It is to be regretted that with such happy faculties for observation, Boerhaave allows himself to be drawn, against his principles even, into the vortex of systems and hypotheses. He commences by preaching, enthusiastically, the method of Hippocrates, and ends by following the brilliant but unsafe example of Galen."*

The prodigious success of the clinic at Leyden, was decisive in favor of that mode of teaching. From the following year, 1715, the sovereign pontiff established, at Rome, a similar institution, directed by the celebrated Lancisi. Soon, Edinburgh, in Scotland, Vienna, in Austria, Pavia, and other cities in Italy, as well as in England and Germany, were endowed with clinical chairs. France followed a little later these examples. In 1795, was established, at Paris, the first chair of clinical medicine which the school of that city ever possessed. Corvisart, who occupied it at first, with J. J. Leroux, elevated his teaching to a level with those of the highest reputation. In fine, the close of the eighteenth century saw clinical instruction established in all the schools of Europe, and even in some of those of the New World.

After the death of Boerhaave, the faculty of Leyden, which had been elevated to the highest degree of splendor, rapidly declined. That of Edinburgh, and above all, that of Vienna, occupied thereafter the first rank, and so existed, without rivals, during more than half a century. The clinical chair of Vienna, founded in 1733, by Van Swieten, under the auspices of the Empress Maria Theresa, was occupied successively by Anthony de Haën, Maximillian Stoll, and John Peter Frank, who still occupied it at the commencement of the present century, after having been one of the glories of the school of Pavia. Thus, after an interruption of more than two thousand years, clinical teaching was revived more brilliant than it ever had been.†

* Dict. Hist. de Med. by M. Dezeimeris, art. BOERHAAVE.

† We have sketched in this section the history of public and official clinical instruction. As to private and free instruction, everything leads us to believe that it never entirely ceased; but it can not be traced with certainty. It is more than probable that in all time, physicians attached one or more young men to their business, who accompanied them in their visits, both in private and hospital practice, whom they trained in the healing art, both by their example and their counsels. In this way the popular archiaters, created by the edict of the Emperor of Rome, were charged to instruct and examine the aspirants to the practice of medicine. In this way also were instituted temporarily, several clinics in Persia and other countries under Arab dominion, and so, also, in 1780, L. Desbois de Rochefort (born in Paris, October 9, 1750, died 26th of January, 1786), gave at La Charité Hospital, Paris, clinical medical instruction, which attracted a numerous assemblage of auditors.

### § II. Collection of Clinical Observations.

We have seen that the physicians of the Erudite Period, having observed and described diseases with more care than physicians of the middle ages, discovered a great number of morbid species, which had escaped their predecessors, such as syphilis, scurvy, raphania, etc. During the Reformative Period, the number of medical observers still increased, but they devoted themselves less to attempts to discover new species, than to determine well the characters of those which already existed, to the formation of more exact and methodic descriptions and classifications, as before remarked, in the section on nosology. Studies were especially directed during this period, to the influence of climates, seasons, regimen, and epidemic constitutions. On these subjects observations had long been neglected, and they promised an ample harvest of discoveries, for the progress of physics and chemistry offered to men of Art the means of establishing, with a precision unknown to the ancients, the variations in temperature, the qualities of the air, of food and drinks, in a word, the influence of all hygienic agents. It is then principally under this aspect, that we proceed to consider the results of clinical observations collected during the last two centuries.

Hippocrates had left to his successors a brilliant outline of medical topography, in his treatise on Airs, Waters and Places. So, also, he left them, in his first and third book on Epidemics, some tableaux of epidemic constitutions, worthy of serving as models in the epoch when they were traced. But the physicians of succeeding ages occupied themselves but little with these objects, notwithstanding their recognized utility, because they required continued observations during a long course of years, and a patience, abnegation and stability, which became more and more rare among physicians after the decadence of the Asclepidean schools.

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### § III. Epidemic Constitutions.

It was only at the end of the sixteenth century, when the Hippocratic method began to obtain a preference over Galenism, that men devoted themselves to the study of the influence of the air, regimen, and epidemic constitutions. William Baillou was the first among moderns, who was distinguished for his researches on this subject. By his education, writings, and genius, as well as by the times in which he lived, this physician forms the transition from the Erudite to the Reform Period, and presents the insensible passage from the Galenism of J. Fernel, to the Hippocratism of Sydenham and Stoll. Profoundly versed

in the Greek and Latin classics, prompt at repartee, subtile and eloquent in argument, he was surnamed, in his youth, the *Plague of the Bachelors.* By these qualities, he belongs to the class of philosophic, or erudite physicians, who followed in the tracks of Galen; but what is extraordinary, he joined to this accuteness and vivacity of spirit, a gentleness and modesty of character which excited the love of his colleagues as much as his talents excited their respect. They gave him an irrefutable proof of esteem and affection, by conferring on him twice, unanimously, the title of Dean. A lover of independence, but much more of humanity, while he refused positions at court, the poor always found him ready to give them, prodigally, his time, his attention, and succor of every kind. At the expiration of his deanship, Baillou devoted himself entirely to the practice of his profession, in which he displayed a talent for observation, and a sincerity and exactness in his epidemic tableaux, of which there had been no example since Hippocrates. It was as a practitioner that he acquired his finest titles to glory, and became worthy to be placed at the head of modern Hippocratists.*

Baillou observed and described the epidemic constitutions that reigned in Paris from the year 1570 to 1580. The following is the tableau he traced, of one of these constitutions: "The year of Grace 1573, the weather was extremely variable during the whole course of the year, during which a great many abnormal diseases were seen—particularly quartan fevers; and what was more astonishing is, that these fevers assumed this type from the very first. The old physicians stated that twenty years before there had existed a similar temperature, and that a considerable number of persons had died of quartan fevers. After death, the spleen was found soft and shrunken, the bile evaporated, and concreted in the gall bladder. Those who were attacked with double quartans, or complicated fevers, or who attempted to cure themselves with remedies, nearly all succumbed. In the beginning of January, the fever changed in character, and became, in some cases a double tertian, and in others a benign, continued fever. Afterward, an infinite number of persons were tormented with itching, inflamed pustules, redness, and articular pains—chiefly those whom the fever had wasted and dried up. Did the perspiration which was observed in these sufferers from fever, proceed from the dryness of the liver, or the general condition of the body?"

He joined to the general sketch of each epidemic, the particular history

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* He was born in Paris in 1538, and died in 1616, aged 78 years. The best edition of his works has been published under the title of *Opera Medica Omnia.* Geneva, 1762.

of some diseases, and commentaries, which develop, confirm, and explain, the principal traits of the general description. The following is one of these histories, which I have purposely chosen among the briefest: The spouse of the Consul Lysseus was taken, in the seventh month of pregnancy, with a flux like a dysentery, accompanied with tenesmus. Very soon a continued fever lighted up. She went to stool thirty times, during the night, and only made ineffectual efforts. An abortion was feared. The disease was sustained especially by an abundance of humors, which seemed to proceed from the region of the liver. Rhubarb and cassia were administered successively, as well as clysters variously composed. A vein was opened twice. Injections into rectum were administered, and anodynes were given in every form, a day and a night, to prevent abortion. The patient was re-established." This clinical observation, like the one which precedes it, is conspicuous, as is seen, by the clearness and conciseness which distinguish the legitimate writings of Hippocrates. Possibly, we have a right to reproach Baillou, as well as his model, for the absence of sufficient details, but it is necessary to recall that the French Hippocrates was accustomed to add to his particular histories an explanatory commentary.

A curious remark to make, in the course of this historic period, is, that in proportion as the authority of Hippocrates increased, that of Galen declined; nevertheless, until the end of the sixteenth century, these two princes in medicine were confounded in a common worship, and Baillou himself quotes both indifferently, in his commentaries. But, after him, the reaction against Galenism became general; very soon no one dared invoke the authority of the Pergamian, while, until the latest times, men of the highest reputation—the Baglivi, the Sydenhams, the Stahls, and the Pinels—boasted for themselves the title of Hippocratists. What, then, is the difference between the Galenism, or the Dogmatism of Galen, Oribasis, Avicenna, and J. Fernel, and modern Hippocratism? No writer has taken the trouble to show us; no one, perhaps, has stated it in a well-defined manner. We will undertake to supply their silence, and trace the line of demarkation which separates these two doctrines.

For this purpose we recall here what as said in the Anatomical Period on the subject of the ancient Dogmatism: that it is composed of two distinct theories, namely, the theory of coction and crisis, and the theory of four elements, or four primordial humors. Galen and his successors embraced this doctrine in its totality; they enlarged, commented upon, and endeavored to explain by it, all the phenomena of animated nature. But the progress of physics and chemistry, in the sixteenth century having demonstrated the errors of the theory of four

elements, it was irresistably necessary to renounce that part of the ancient Dogmatism, and cling only to the first. It was then that the sect of modern Hippocratists was formed, which preserved of the doctrine of Hippocrates only the dogma of coction and crisis, founded on the existence of a principle, or intrinsic force, inherent in every living being, and presiding over, or at least co-operating in, all the phenomena, whether physiological or pathological, that are developed in it. The consequence of this theory is, to consider every derangement of the health as an effort of nature, or the vital principle, tending to remove the obstacles which oppose themselves to the free exercise of its functions; hence the aphorism, that the physician is the minister of nature—that he must study its tendencies, and respect them, insomuch as they are not evidently bad, and, in short, to interfere with remedies only when the vital forces appear inefficient, or sur-excited, or deviated. One is a Hippocratist, in the modern sense, from the moment he admits the autocratism of nature, or the vital forces, no matter otherwise how much he tend, with Sydenham, toward humoralism, with Stahl, to animism, or with Pinel, to solidism, etc. There is, as is seen in our days, great latitude in the qualification of Hippocratists, and many physicians to whom it is applied, and who themselves profess it, have advocated doctrines extremely diverse.

However this may be, we have not to examine here the value of the fundamental axiom of modern Hippocratism. That examination will be more appropriate in the chapter on theories and systems. It has sufficed for the moment to show in what modern Hippocratism differs from the ancient Dogmatism—that is, from Galenism.

Thomas Sydenham, who flourished during the second half of the seventeenth century, merits the surname of the English Hippocrates, as much on account of his medical doctrine, as of the profound study he made on the influence of epidemic constitutions. Partisan of the philosophy of Locke, of whom he was the cotemporary and friend, he was one of the first who strove to bring physicians back to the observation of pure and simple pathological phenomena, of which Hippocrates had given the example in some of his writings.

We give here some maxims extracted from the works of Sydenham, which seem to us to comprise the medical philosophy of that author: "In the first place," he says, "it is necessary to reduce all diseases to precise and determined species, with the same care and the same exactness that the botanists have displayed in their treatises on plants. In the second place, whoever desires to give a history of a disease, should renounce every philosophic system and hypothesis, and mark exactly the smallest morbid phenomena which are clear and natural; imitating

thus, the painters, who, in their portraits, have great care to express even the slightest marks of the persons whom they desire to represent. In the third place, it is necessary, in the description of a disease, to expose separately the proper or essential, and the accidental and foreign symptoms. In fine, the seasons that favor most each order of symptoms must be carefully marked. These are not the only things necessary to observe in writing the history of diseases, but they are the principal."* Such are, in regard to pathology, the general principles of Sydenham.

In regard to therapeutics, he expresses himself in these terms: "The great Hippocrates, after having established as a solid basis of his Art, this incontestible axiom, namely: *nature cures diseases*; has exposed, clearly, the symptoms of each of them, without having recourse to any hypothesis or system, as may be seen in his works. He has, also, given rules for treatment, founded on the course which nature takes in the production and cure of diseases. This is very nearly in what consists the theory of the father of Medicine, and all he demands of a physician is, to succor nature when she is overcome, to correct her when she errs, and to bring her back into the circle which she has just abandoned. It is absolutely impossible for a physician to know the morbific causes which have no relation to the senses; neither is it necessary."†

It is easy to recognize in this *exposé* of principles, the doctrine of a modern Hippocratist, but we find there, also, some maxims borrowed from the ancient Empirics; such as the following: "It is necessary to describe the pathological symptoms as they manifest themselves, without the aid of any hypothesis, and to reduce diseases to precise and determined species, like the vegetable species formed by the botanist. It is absolutely impossible for a physician to know the morbific causes which are not all appreciable to the senses." The first of these propositions recalls, evidently, the symptomatic groups, or the theorems of the ancient Empirics; the second excludes the research of the so-called occult or essential causes against which those philosophic physicians constantly protested. It it on this account doubtless, that some writers, among others, Kurt, Sprengel, have ranked Sydenham among the sectators of Empiricism. But he is distinct from them in several respects, principally in that he does not conform to his own sage maxims which we have just quoted, but, on the contrary, he transgresses and contradicts them at every step. I might quote a crowd of these contradictions, but shall content myself with the two following: "Every specific

* Œuvres de Médicine Pratique, preface, sec. 7 to 12. Translation of Janet.
† Ibid., 10 to 15.

disease," he says, "is an affection which proceeds from an exaltation or specific alteration of some of the humors of the body."* Again, wishing to explain the generation of spring-fevers, he reasons as follows: "In winter, the spirits being concentrated by the cold, become strong; afterward, the heat of the spring puts them in motion, and as they find themselves mixed among the viscous humors which nature, during the winter, has accumulated in the mass of the blood, (though these humors may be still less tenacious than those which, dried by the heat of summer, cause autumnal fevers,) the spirits, I say, finding themselves embarrassed and overwhelmed by these viscous humors, make an effort to disencumber themselves, and by this effort produce the ebulition which occurs in spring fevers. In like manner, if bottles full of beer, which have been long kept in a cool cellar, be brought close to a fire, the liquor soon bubbles and seeks to escape."† I have no need to remark, I think, how far the pathogenetic explication which we have quoted, passes the limits of sensible phenomena to enter into the labyrinth of hypotheses—how much they are opposed to the sage maxims proclaimed above, which the author has borrowed, possibly without suspecting it, from the Empirical doctrines.

Sydenham, after having studied with admirable patience for fifteen consecutive years, the influence of epidemic constitutions, thought he could emit, on that subject, the following theory: "There are various constitutions of the year, which come neither from heat, cold, drouth nor humidity, but rather from a concealed and inexplicable alteration, which occurs in the bowels of the earth. Then the air is found affected with pernicious exhalations, which cause special diseases, as long as the same constitution is predominant. In fine, at the end of a few years this constitution ceases, and gives place to another. Each general constitution produces a fever which is proper to it, and which, outside of that, never appears. For this reason, I call these sorts of fevers stationary, or fixed." ‡

"What appears to me especially difficult," he says, further on, "is to know, in the commencement of a constitution, the species of fever which is going to prevail, since, until then, no specimen of it has been seen. * * * But though it may be difficult to foresee, certainly, the new species of fever which is about to commence—and when even that must be supposed entirely impossible, we have, at least, always the resource of directing the treatment upon general principles. By this means we

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* Preface to Œuvres de Médicine Pratique. Translation of Janet.

† History and Curation of Acute Diseases. Sec. 1, chap. 5.

‡ Ibid.

are enabled to place our patient out of danger, provided we proceed cautiously, without too much haste—for there is nothing, according to my view, more pernicious than precipitation, nor anything which causes the death of more persons who are attacked with fevers."*

There is no question but that we see epidemics frequently developed, the production of which, possibly, can be attributed neither to variations in the atmosphere, nor to the qualities of the regimen, nor to any other known cause. It is equally evident from common experience, that when an epidemic reigns with a high degree of intensity, it impresses on all intercurrent diseases a particular character, which requires a modification of the treatment, according to the nature of the epidemic. This is what all attentive practitioners have observed, and which did not escape the notice of any physician in Paris during the cholera epidemic in 1832. But to pretend that there exists all the time, an epidemic constitution, or stationary fever, independent of the influence of the regimen and atmospheric vicissitudes, a constitution that would change the natural character of diseases and necessitate grave modifications in their treatment, is to generalise a particular observation—is to erect an exceptional fact into a rule. A similar theory, if it could be admitted, would take from therapeutical precepts all stability, and would transform medical practice into a continual groping—a consequence that Sydenham himself did not disown in the last quotation, and which is in itself sufficient to cause the rejection of his doctrine.

This doctrine has, however, a great number of sectators of the highest merit, among whom we must place in the first rank, Maximillian Stoll and Philip Pinel. The celebrated professor of Vienna, whose talents for observation cannot be questioned, strives, with a zeal more meritorious than fortunate, to unravel the theory of epidemic constitutions; but though he expresses himself, on this subject, with more precision than any other, he has not been able to dispel the obscurity that rests upon it; because he has himself extended beyond measure, the idea of stationary fevers, as is easy to be seen by the following passage:

"The stationary," he says, "is embraced in a certain number of years; it gradually increases till it attains its hight, then declines, giving place to another stationary, which succeeds it. Do these same stationaries return in a fixed and certain order, after a certain number of years? Are they limited in number? Or do they produce, sometimes, new ones? These questions cannot be determined, on account of the absence of observations made during a long course of years by skillful physicians in one locality, and compared with similar observations made

* Hist. et Cur. Maladis Aiguës, sec. IV., chap. VI.

by others. Thus we are ignorant, up to this time, of the nature, number, extent, and period of stationary fevers: Solely it is established after the observations of Sydenham and my own, that a stationary fever extends its influence on all absolutely febrile diseases, and that it controlls them, whether they are independent of the changes of the season, or proceed from any isolated cause. It is no less certain that the stationary fever exercises a great influence on chronic diseases, whether febrile or not." *

Independently of the stationary fever, a species of protean, present in all places, in all time, associated with all diseases, clothed in all forms, without having any of its own, the same authors admit other fevers, which they name, sometimes sporadic, or intercurrent, and again, annual, or cardinal.† There are, according to Stoll, four sorts of annual fevers, namely: the *inflammatory*, which prevails most in the winter, and at the commencement of spring; the *bilious*, which predominates in the heat of summer, and at the beginning of autumn; the *pituitous*, which shows itself in the passage of autumn into winter, and of winter into spring; finally, the *intermittent*, which appears in the spring and autumn. Annual fevers take, often, their vulgar name from some dominant symptom; thus they are called pleuritic, miliare, petechial, rheumatic, morbilous, variolic, etc., when they are accompanied with pleurisy, miliary, or petechial eruptions, rheumatism, etc. ‡

Notwithstanding my respect for such observers as Sydenham, Stoll, and Pinel, I can regard their stationary fevers only as an allusion, a *utopia*, which resembles the *quid divinum*, *τι θειον*, of the ancients, an expression by which they were accustomed to designate the unknown cause of all strange and inexplicable phenomena. In regard to annual or sporadic fevers, no one doubts their reality, for each of them manifests itself by evident and palpable signs that are appropriate to it. Thus the pathological state which is designated under the name of inflammatory fever, is very distinct from that which is named bilious fever, whatever opinion, otherwise, one may have on the origin and reciprocal relations of the two states; so, pleuritic fever, or pleurisy, is perfectly distinct from miliary eruption, rheumatism, variola, etc., when however these divers affections do not co-exist, nor are complicated in the same subject.

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* Aphorisms on the Knowledge and Cure of diseases. Translated by Corvisart.

† "The stationary fever," says Stoll, "is disguised frequently, and in various ways. It imitates different diseases, though at bottom, its character may be everywhere the same, and the method of treatment the same in every case." (Apho. 391.)

‡ Aphor. 39, 41.

§ IV. Medical Topography.

The study of Medical Topography is intimately united with that of epidemic constitutions; these two branches of science should go together; they mutually enlighten and complement each other. The cultivation of both commenced about the same epoch, namely, during the second half of the sixteenth century. Prosper Alpin was one of the first to occupy himself with topography, in a medical point of view. He wrote a book on the natural history of Egypt, the diseases of its inhabitants, the ancient and modern medicine of the country—full of judicious and erudite reflections, in which the good taste of the author is prominent. James Bontius collected interesting observations on the natural productions of the West Indies, and on the diseases which habitually prevail there. William Pison wrote a similar work on Brazil, and united afterwards, in the same edition, his work with that of Bontius, under the title of *Historia Naturalis et Medica Indiæ Orientalis.* The celebrated traveler Kœmpfer, collected a mass of excellent observations on medicine and botany, during the ten years he employed in travels in Persia, Armenia, Japan, the Kingdom of Siam, and other parts of Eastern Asia.

In his history of the diseases of St. Domingo, J. B. Poupè Desportes, arranged the medical topography of the island, and described the epidemic constitutions which he had observed there, from 1732 to 1747. George Cleghorn studied, with much care and sagacity, for thirteen years, the endemic and epidemic affections of the island of Minorca, the manners of the people, the qualities of its atmosphere, and the nature of the soil and its productions. He remarked a great analogy between the diseases of that country, and those described by the ancients, which he attributed to the conformity of the climate of Greece, with that of the above mentioned islands.* J. Lind wrote an excellent treatise on the Diseases of Europeans in hot climates, and on the means of preserving the health of sea-faring men during long voyages. William Hillary, made meteorological and medical observations in the island of Barbadoes.† Lionel Chalmers, wrote on the

* Observations on the Epidemical Diseases in Minorca, from 1744—1749. London. 1779, in–8.

† Observations on the change of the air, and the concomitant epidemical diseases, in the Island of Barbadoes. London, 1759, in–8.—Comparez J. Hendy. Mémoire sur la maladie glandulaire de Barbade (Mémoires de la Société Médicale d'émulation, Paris, an IX, T. IV, p. 44,) et Alard. De l'inflammation des Vaisseaux absorbants, lymphatiques, dermoïdes et sous-cutanës, etc. Paris, 1824, in–8, fig.

climate and diseases of South Carolina. Bajon, addressed to the Academy of Natural Sciences of Paris, several memoirs,* which obtained the approbation of that learned association, concerning the medical topography of Cayenne, and of French Guiana, the *mal rouge* of Cayenne, and the effects of the climate on newly arrived Europeans, etc.

In Europe a strong impulse was given to the study of topography: a multitude of researches were undertaken with this object. Learned societies often put, in *concours*, questions relative to the medical topography of the places in which they were held; many physicians published spontaneously the result of their observations in the countries where they practised; aspirants to the doctorate often took as a subject for their theses, the description of localities where they designed to locate for the practice of their profession. There was not a province or a city of considerable size, which did not become the subject of one or several topographical monographs.†

Finally, an effort was made to collect all the observations that had been published on this subject, in every part of the world, and to compose from them a general geography for the use of physicians, in which all the diseases proper to each climate, and each country, should be clearly defined, with the probable causes of their development and the method of treating them. William Falconer was the first who published a work of this character, entitled, Remarks on the Influence of Climate, Geographical Situation, Nature of the Soil, Inhabitants, Quality of Food, and Mode of Living; Dispositions, Temperaments, Manners of the People, Intelligence, Laws and Customs, Forms of Government, and Religion of the Human Race. But the execution of the work so pompously announced, was far from responding to the promises of the title. Some years after, Leonard Louis Finke published a general geography of practical medicine—an incomplete and undigested compilation, but richer in facts, and exact observations, than the preceding.

To give an idea of the multitude of objects included in the medical topography of a country, I will here transcribe the programme which was summed up by the Royal Society of Medicine, of Paris, in proposing for a prize essay, the examination of the geographical situation of that capital, and its environs:

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* Mémoires pour servir â l' Histoire Naturelle de Cayenne et de la Guiane Francaise. Paris, 1777, 2 vol. in-8.

† Several Medical Topographés worthy to be consulted, are published in the Memoires dé la Societé Royal de Med. Paris, 1776–1790, 10 vol. 4vo. See also Recueil d'Observations de Medicine des Hospitaux Militaire, etc.

"Determine what are the mountains or hills that concur in the formation of the Paris basin, and that are found in its environs. What is their extent, their form, and their elevation above the ordinary level of the Seine? What is their position relative to the four cardinal points of the horizon, their respective distance, their connections among themselves, by their projecting and receding angles, their situation and direction in relation to the city? What is their internal composition, the nature of their soil, and of that of the valleys formed by them, and lastly, what is the extent and direction of these valleys? What are the position and extent of the forests planted in the environs, their distance from the city, the quality of their soil, the species and average hight of their trees?

"What are the running or stagnant waters that are found in the neighborhood, either constantly or only at certain times of the year? What is, independently of the river water, the quality of drinking water, and the changes it undergoes at different seasons? What are the courses of the usual winds, and what obstacles, what deviations and modifications, do they undergo from the forests, the mountains, and valleys? Lastly, what are the different productions for the use of men and animals, furnished by the surrounding country."

This programme, as is seen, includes only a part of the documents which compose medical topography; to complete it, it would be necessary to add a general view of the city, its streets, squares, and the public and private edifices of the population; to describe the physical constitution of the inhabitants, their tastes, inclinations, manners, nutrition, clothing, civil and political state, etc.; lastly, to give an account of their endemic and epidemic diseases.

A scheme so vast is not easy to fill, for a city like Paris, and much less still for a great province or a kingdom. It requires extended and varied knowledge, an immense number of positive observations, a spirit of analysis to decompose the facts, and to ascertain their elements, a synthetical genius, to connect them according to their analogies, and deduce from them general consequences. How would it be if one wished, in work of this kind, to comprehend one of the four great divisions of the terrestrial globe, or of the entire globe itself? The life of a man would not be sufficient for it, whatever might be his capacity, and we feel that an enterprise of this importance can not be attempted except by a learned society, and executed in the period of a great number of years, with the concurrence of savans and physicians disseminated over all parts of the earth.*

* The late lamented and eminent Prof. Daniel Drake, M. D., made a contribution to Medical Science on this subject, that has no parallel in medical literature. See

# CHAPTER X.

## THEORIES AND SYSTEMS.

### PRELIMINARY REFLECTIONS.

The philosophic system of Aristotle, and the medical system of Galen, had resisted the attacks, more violent than skillful, of the innovators of the sixteenth century. By the help of some modifications in details, these systems had appeared sufficient to the majority of minds to explain the *rationale* of observed phenomena in the mental, moral, and physical world. Those, even, who found them insufficient or defective in some respects, still preferred them to most of the hypotheses, more brilliant than solid, of the modern Platoneans, and to the crude lucubrations of the propagators of the Occult Sciences. Thus, the doctrines of the schools sustained themselves less, perhaps, by their intrinsic merits than by the feebleness of their adversaries, because these had up to that time proposed nothing better, or that was even comparable to them. It may be said, perhaps, that under this state of things it was wiser to rest in doubt and waiting, without pronouncing in favor of any party. To this counsel I shall offer only this objection: it was impracticable. Indeed, of speculative truths we may certainly rest in doubt and waiting; thus, we may doubt all our lives if there are several sorts of spirits in the animal economy, as indicated by Galen, or if there is only one sort, as is asserted by Laurent Joubert; but in regard to practical truths, doubt and waiting are impossible. For example, let a physician be called to a patient: he must necessarily prescribe something or nothing. Now, if he order nothing, he takes a position, just as much as if he had ordered something. We thus see that the practitioner can not remain indifferent in regard to therapeutical methods, and that, from taste or compulsion, with or without conviction, he is obliged, every day and at each moment, to adopt one of them. It is, therefore, important that he study and compare them well beforehand, in order to adopt the best, or, if you please, the least defective—the one which offers the best guarantee of success. To defer this examination, to take no thought in each circumstance, except from the inspiration of the moment, is to exhibit ourselves unworthy of the medical priesthood—is to play *odd and even* with the lives of our fellows.

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his Systematic Treatise, Historical, Etiological, and Practical, on the Principal Diseases of the Interior Valley of North America, as they appear in the Caucasian, African, Indian, and Esquimaux varieties of its population. Vol. I. Cincinnati, 1850.—Tr.

But the time approached when men more powerful in genius and science, began to demolish the antique edifice of human knowledge, in order to reconstruct it on new foundations. Already Martin Luther, the boldest of the innovators of the sixteenth century, having proclaimed the liberty of investigation in matters of religion, drew after him a notable part of Europe. Copernicus and Galileo had opened the route in which Newton afterward immortalized himself by almost fabulous conceptions. Natural history, Physics, Chemistry, and Medicine were enriched, every day, by facts that were in manifest contradiction to received theories. The necessity of a general recast of the sciences was more and more felt; the ancient philosophic doctrine could not sustain itself in the midst of the crumbling ideas which had served to build it up.

Thus the Reform Period witnessed the appearance no longer of mere simple outlines, such as we have signalized in the preceding period, but complete systems of philosophy, wisely elaborated by minds of the first order: systems which have exercised a marked influence on the march of the human mind, and on that of Medicine in particular; systems of which it is indispensable to have a summary idea, in order to comprehend and appreciate modern medical theories.

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## ART. I. HISTORIC SKETCH OF PHILOSOPHY DURING THE SEVENTEENTH AND EIGHTEENTH CENTURIES.

### § I. Retrospective Considerations.

The magi of the East, the priests of Egypt, and the most ancient philosophers of Greece, were persuaded that to make a grand progress in science, as well as in wisdom, there were no better means than to separate from the crowd and the noise of life, become isolated from all external sensations, and meditate deeply on the great truths which constitute real knowledge and lead to true happiness. Such was the aim of the institutions which Pythagoras founded in Italy—imposing silence on his disciples; and such was the advice that Plato, heir of the doctrine of Socrates, gave to his scholars. It is necessary, he says, in order to arrive at a knowledge of the truth, to retire within one's self, and be freed, as much as possible, from all outward impressions, so that the soul, disengaged by thought from the bonds of the body, may rise in full liberty, toward the eternal essence whence it emanated; for there is the source of all light; it is there only that our spirit will find science, and repose in recalling its celestial origin.

This method, which we name *intuitive*, or *reflective*, led the earliest sages to the discovery of the moral and religious truths which are the base of the social order. By it, they elevated themselves to the idea of one God, eternal and infinite—Sovereign Arbiter of the destinies of the world; to the idea of the immortality and spirituality of the soul; to the ideas of justice, virtue, future rewards, etc. It is also by this intuitive method that mathematical axioms are discovered; axioms which charm us by their infallibility, and from which are deduced, by reasoning from irresistible evidence, an infinity of theorems, more and more admirable. It was especially this infallibility of mathematical reasoning that led the philosophers to introduce the same method into all the sciences. They flattered themselves that by following exactly the same course for every class of ideas, they could advance with the same certainty. Was it not natural, indeed, to desire to generalize a mode of acquisition which had produced such satisfactory results in so many respects; and must we not excuse Plato when he seeks in ideas, purely abstract, the secret of the creation of the world, and the explanation of natural phenomena; when he essays to establish a system of cosmogony on geometric abstractions, by supposing, for example, the number of primitive triangles that should compose each of the material elements.

Nevertheless, the men who made a particular study of the physical world, such as Democritus, Hippocrates, and Aristotle, did not fail to perceive that, in order to arrive at a knowledge of the properties of matter in general, and of bodies in particular, mental reflection, apart from all impressions on the senses, was not sufficient; but that we must, on the contrary, give great weight to these impressions, and make them the basis of our judgment in what relates to the order of sensible things. Hippocrates was one of the first who proclaimed the necessity of observation in medicine, and the impossibility of discovering the causes of diseases, their nature, their course and their effects, by any other plan. Aristotle generalised to excess, perhaps, the thoughts of Hippocrates, when he affirmed that all our knowledge is derived from sensation—"*Nihil est in intellectu quod non priùs fuerit in sensu.*" But he did not mean to say by this that we acquire ideas by the senses only; he meant, merely, that the first ideas that arise within us, and which are the foundation of all the rest, are derived from the senses.

Aristotle, though having an opinion diametrically opposite to that of Plato, on the origin of our acquirements, agreed with him in saying that the first notions that are formed in our minds are very general ones—mother ideas—principles. Now, as we have demonstrated in a former section, this is a very grave philosophic heresy, and it drew these two

philosophers and their successors into an inextricable labyrinth of subtilties and contradictions. For more than two thousand years it was the established rule to place at the head of all treatises, general axioms, which were very improperly named principles; and efforts were subsequently made to deduce from these principles a series of propositions, more or less logically connected. Observation, when one deigned to consult it, served only to lay the first foundation of the scientific edifice; reasoning must do the rest. Such was, with some exceptions, the mode of proceeding of all the authors and philosophers, particularly till toward the close of the sixteenth century of the Christian era.

At that epoch the method of pure observation had partially penetrated into some branches of human knowledge, such as physics, chemistry, and astronomy, and had produced admirable results, which had greatly shaken the scholastic philosophy. It now needed only the the advent of a generalizing and profound mind, who would dare penetrate to the base of our ideas, and succeed in finding a form of reasoning less defective than that generally adopted. Now, two men of a character and genius very different, appeared nearly at the same time, both attempting this great enterprize. The first was Francis Bacon—the second René Descartes.

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### § II. On Modern Sensualism and Reasoning by Induction.

Bacon, versed early in the management of men and affairs, endowed with a fine and positive mind; cultivating by predilection the natural sciences, physics and chemistry, was one of the first to feel and point out clearly the defect of the method adopted till then, of placing at the foundation of the sciences, the most general axioms. "There are and can exist but two ways of investigating and discovering truth. The one hurries on rapidly from the senses and particulars, to the most general axioms, and from them, as principles, and their supposed indisputable truth, derives and discovers intermediate axioms. This is the way now in use. The other constructs its axioms from the senses and particulars, by ascending continually and gradually, till it finally arrives at the most general axioms, which is the true but unattempted way."*

This is a very important passage, and merits to fix our attention; for it lays down in the clearest manner the difference that exists between modern sensualism and the sensualism of Aristotle. Let us recall,

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* Novum Organum, Book I., chap. I., Aphorism XIX.

indeed, the extremely subtile sophisms by which the Macedonian philosopher proved that the first ideas which are formed in our minds through the instrumentality of the senses, are very general ideas; whence he concludes, that in all sciences we should commence by the most universal axioms.* Bacon, without seeking to unravel the knot of this sophism, contents himself with establishing a rule entirely contrary, which consists in passing from sensations to particular facts, then from these to more extended notions, and so on, rising by gradation from individual facts to notions more and more general, up to the most universal axioms, which form the crown, and not the base, of natural sciences.

It has been customary to regard Bacon as the restorer of the method of observation, and, in fact, he continually asserts it in his works; but many others before him have proclaimed it with no less persistence, and have consequently been able to avail themselves of a much better method to reach great discoveries. Whence, then, the exclusive honor attributed to him, of having re-established this method? Because he gave it a new development, and was the first to teach that particular ideas are the base of the scientific pyramid, and axioms are its summit. This was, indeed, a radical innovation, full of the future, the importance of which was completely realized by Bacon; for he often speaks of it with enthusiasm, and praises it as an unparalelled discovery. "No one has yet been found possessed of sufficient firmness and severity to resolve upon and undertake the task of entirely abolishing common theories and notions, and applying the mind afresh, when thus cleared and elevated, to particular researches; hence our human understanding is a mere farrago, and crude mass, made up of a great deal of credulity, and accident, and the puerile notions it originally contracted. But if a man of mature age, unprejudiced senses, and clear mind, would betake himself anew to experience and particulars, we might hope much more from such a one; in which respect we promise ourselves the fortune of Alexander the Great!" †

In another work, the English metaphysician, desiring to signalize more and more his method, and its difference from the ancient one, expresses himself in these terms: "The end of our new logic is to find, not arguments, but arts; not what agrees with principles, but principles themselves; not probable reasons, but plans and designs of works—a

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* See his philosophic doctrine: Phil. Period. In this sophism Aristotle confounds, without knowing it, general ideas with confused ideas, which are very different. Hence his errors, and those of the writers who have followed him.

† Loc. Cit., Aphorism XCVII.

different intention, producing a different effect. * * * The nature and order of the demonstrations agree with this object. For in common logic, almost our whole labor is spent upon the syllogism. Logicians, hitherto, appear scarcely to have noticed induction, passing it over with some slight comment. But we reject the syllogistic method, as being too confused, and allowing nature to escape out of our hands. * * * We therefore think that induction is the true method which guards our senses against all error, which clearly follows nature, is akin to practice, and is almost practice itself." *

Unfortunately, it is not the form of argument, not the logical method, that secures a man from false reasoning. Bacon himself furnishes us the proof of this in his Organum—in that work, even, which he believed was destined to direct the human mind, with certainty, toward the truth. In fact, after having exposed his method, this philosopher, desiring to show its application, and prove its excellence, by examples, essayed to resolve by it several problems, one of the first of which I will give: What is the nature of heat? After an infinite number of exclusions and circumlocutions, he arrives at the following conclusion: "Heat is an expansive motion, restrained, and striving to exert itself, in the smaller particles, but with the following modifications: first, by its tendency to rise, though expanding toward the exterior; second, this effort is modified by its not being sluggish, but active, and somewhat violent." † I leave to more skilful critics the task of explaining this definition, as well as the premises from which it is derived; but I doubt if one more obscure and puzzling can be found among those transmitted to us from antiquity.

A little farther on the same author, desiring to determine the nature of tangible bodies, expresses himself thus: "All tangible bodies inclose an invisible and intangible spirit, to which they serve as envelope, and as clothing, whence result three orders, or modes of action, which are the triple source of the powerful effects of the spirits exerted on tangible bodies. When this spirit exhales, the body contracts and dries; if it is retained, it softens or liquifies it; finally, if it is neither entirely emitted nor entirely retained, then it is developed, and forms the members, assimilates, evacuates, and organizes. * * * We may distinguish three species or modes of spirit, namely, the unconnected spirit, the branching spirit, and the branching and cellular spirit, or the one which is ramified and distributed in different cells or little cavities. The first is that of all inanimate bodies; the second, that of

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* The Dignity and Advancement of Learning.

† Nov. Organ.

vegetables; the third, that of animals." This is not as obscure, certainly, as the definition of heat, but is it any more conformed to observation? Does not the author surpass, in his description of the spirit of tangible bodies, the teaching of experience, to which alone he should attach himself?

Induction, as we see, does not shelter us from error any more than syllogism, and the merit of the change introduced by the English philosopher in the manner of cultivating the sciences, does not consist, as he supposed, and as many others after him did, in the substitution of the inductive for the syllogistic form. It consists, above all, in the emission and propagation of that fundamental truth above announced, that from sensations and particular facts, our mind must not spring, at one leap, to the most general axioms, but that it must gradually rise from particular notions transmitted by the senses to ideas more and more general. This single proposition contained the germ of the whole philosophic revolution; for, from the moment it was admitted as a principle, that the first ideas which are formed in our minds are particular ideas, related to individual objects, and not, very general ideas comprising a multitude of things, the whole edifice of ancient philosophy began to crumble down, and it was necessary to reconstruct it on a new base, viz.: the careful study of facts.

Bacon proposed to describe all the forms of experience, as Aristotle had described all the forms of reasoning; but his enterprise has remained more defective and vain, considered as a whole, than that of the Greek philosopher, for no one has ever made use of the logic elaborated by Bacon, while that of Aristotle was employed exclusively during more than twenty centuries, and is still, occasionally. We may judge of the inextricable confusion which reigns in the work of the English philosopher, by the following fragment, which forms a part of the conclusion: "We must say, in conclusion," he says, "that our *Organum* is only a simple logic, and not a treatise on positive philosophy. The object of this logic is to direct the understanding, and to teach it not to hang upon, if we may so say, vain abstractions, and the pursuit of chimeras, like the vulgar logic, but to grasp nature, and to analyze her—to discover the true properties of bodies, the real and well determined actions in matter; in a word, to discover a science which results not only from the nature of the mind, but also from the nature of the things themselves. Therefore, the reader must not be astonished to see this work strewed and enriched with observations, experiments, and views which belong to the science of nature, and which, in enlightening our precepts, serve as so many models of our philosophic course. Now, these prerogatives of facts or instances, as has been seen, are

twenty-seven in number, viz.: *solitary, migrating, ostensible, clandestine, constitutive, similar* and *singular*; also, instances of *deviation, limitation, powers, agreement,* and *hostility,* and *subjunctions*; instances of *alliance,* of the *cross,* of *divorce,* of the *door, citation, carrying forward, route* or *passage, supplement, dissection, radiation, course, doses of nature,* of *struggle* or *predominance,* of *indication,* of *those generally useful,* and, finally, of *magic.*"* Thus Bacon, after having advanced from one degree, the theory of Sensualism, falls into chaos; but he has, nevertheless, opened the route and indicated, though confusedly, a new theory, which others proceeded to study and elucidate much better than he.

John Locke, born at Wrington, near Bristol, in 1632, six years after the death of Bacon, embraced first the study of Medicine; but the delicacy of his health did not permit him to practice that profession. The reading of the writings of R. Descartes awakened in him a taste for philosophy. However, he rejected the Cartesian doctrine on innate ideas, and embraced the Peripetecian principles renewed by Bacon—that all our ideas come from the senses and from reflection, that is to say, by operations of the mind, or the comprehension of these sensations. Here, he says, are the only two sources of all our knowledge: the impression that objects make on our senses, and the proper operations of the soul concerning these impressions, on which it reflects as so many veritable objects of contemplation.† Thus proceeding from the simple perception, or, in other words, from the conscience which our mind has of sensitive impressions, this philosopher conducts us, by an uninterrupted gradation, to the most complex and abstract operations of thought. He shows how the ideas arise, multiply, arrange and connect themselves in our understanding; how we arrive at representing these ideas by language; what is the real value of words; what are the abuses of language, and into what errors we are drawn, by the habit we early contract, of considering the abstractions of our minds as having an existence apart from us.

Bacon had believed and taught, that, the first ideas which are formed in our minds, through sensation, must be particular ideas, related to the objects or individual facts; he had protested, energetically, against the plan of approaching the sciences by generalities, or axioms. Locke, analyzing with a rare sagacity the functions of the understanding, from the simplest perception, to the highest abstractions, demonstrated what Bacon had only asserted, and destroyed without attacking it directly,

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* Organ. Nov., liv. II, part II, sec. II, chap. 2, § III.

† Philosophic Essay on the Human Understanding, chap. I, § 24.

the famous sophism of Aristotle, and exhibited in a style as neat as persuasive, the doctrine of Sensualism or Empiricism. This doctrine made rapid progress in England and in France. The greatest philosophers and naturalists of these two countries, during the eighteenth century, adopted, extended, and drew from it consequences more or less legitimate.

Stephen Bonnat, of Condillac, born at Grenoble, the thirtieth of September, 1714, (died near Beaugency, third of August, 1780,) was one of the most distinguished representatives of this philosophy. He contributed more than any other person to vulgarise it, by simplifying it still more, and applying it to all the sciences. He pretended to demonstrate that all our knowledge comes from our sensation; or, in other words, is nothing else than sensations transformed. He reduced all the rules of reasoning to a single one, identity in propositions, and wished, also, to bring back all modes of acquisition and demonstration to one only, analysis. The writings of this philosopher having become classic, in France, we proceed to extract from them some general maxims, now admitted as incontestable rules in the sciences devoted to sensible objects, such as physics, chemistry, natural history, and medicine.

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### APHORISMS OF PHILOSOPHY, PARTICULARLY APPLICABLE TO THE PHYSICAL SCIENCES.*

I. The ideas we form from sensible objects, are, in their origin, but the consciousness of impressions which these objects make upon our senses: now, as there are in nature only individuals, it necessarily follows, that we have, in principle, only individual ideas—ideas that are related to such and such an object.

II. We have not imagined names for each individual; we have only distributed the beings in different classes, which we distinguish by particular names, and those classes are what are termed genera, species.

III. To form a class of certain objects, is, then, nothing more than to give a common name to all those we judge to be similar. But we would strangely deceive ourselves, if we imagined that there are, in nature, species and genera, because there are species and genera in our manner of viewing her.

IV. The more our discernment is perfected, the more the classes will be multiplied, because there are no two individuals who do not differ in some particulars. But, if it is important to make distinctions,

*The exclusive partisans of the Sensualist doctrine derive from the same source, moral and metaphysical truths; but the legitimacy of this derivation is warmly contested by other philosophers.

it is, perhaps, more important not to make too many of them. Do you desire to know within what limits we may divide and sub-divide our ideas? I reply, or rather, nature replies for me, until we have enough classes to guide us in the use of things relative to our wants.

V. Sensible objects being known to us only by the impressions they make on our senses, our minds perceive nothing in the objects beyond the sensations they excite. Thus, when we are asked what is the nature or essense of a body, we are only able to respond by announcing the sensible qualities of that body.

VI. All the qualities of a being, considered in itself, are equally essential, for they all appertain to its nature and its essence; but they are not all equally essential, in relation to us, and the abstract idea which we have formed of that being; so that, what is termed *essential*, or *non-essential*, in any thing, is only so, relatively, to our ideas.

These aphorisms may, henceforth, be considered immutable; for they not only flow from the theory of sensualism, but they are also confirmed by the sectators of a philosophic doctrine opposite to this, as we shall see in the following paragraph. But, beforehand, it is necessary that we refute two errors propagated by the authority of Condillac, errors strongly accredited, in the schools of philosophy, and which are only calculated to retard the progress of the science of observation.

### FIRST PARADOX.

The art of reasoning, says Condillac, may be reduced to a well-formed language; and, all sciences would be exact if they employed a simple language.

This celebrated ideologist supports this proposition by a very specious argumentation, founded, principally, on the certainty and facility of reasoning in mathematics; advantages which he attributes to the perfection of algebraic language. He cites, in point, the following problem: "If a man holding 'counters' in both of his hands, passes one from the right to the left, the number of counters is alike in both; if, on the contrary, he passes one counter from the left hand to the right, he has double as many counters in the right one; the question is, how many counters had he, at first, in each hand? Condillac in the first place resolves this problem in common language; then he shows how much more easy it is to obtain its solution, when the problem is translated into algebraic language. Hence he concludes, that if the sciences are but slightly inexact, it is only because their vocabularies are badly formed; a defect which is not usually perceived, or which we do not know how to correct." "Must we be astonished," he exclaims, "that men cannot reason, when the language of the sciences

is only a jargon, composed of too many words, some of which are common, with no determined meaning, and others are foreign or barbarous ones, and not well understood? All sciences would be exact if we knew how to speak their respective languages."

It seems from this argument that the exactness of the sciences reduces itself to the work of the grammarian, which is a paradox unsustainable, and falls before the investigation of good common sense. Who will dare affirm that the modern progress of physics, chemistry, natural history, etc., are due, entirely, or even principally, to mere modifications introduced into the language of these sciences? Who does not know, on the contrary, that this progress is almost exclusively the result of observation and of experiment? Do we not see every day, that men almost, or entirely unlettered, make discoveries that have escaped the learned?

The proposition of the French metaphysician is false, even in relation to mathematics; it is not true that algebraic language has given to the reasonings of mathematicians more certainty or conviction; their reasonings were as infallible before the introduction of algebra as since, only they were less prompt, less easy, and less general. The Romans, with their very defective figures, calculated everything as exactly as the Arabs, whose figures are much more perfect; but they calculated less rapidly and less conveniently.

Therefore, if Condillac had limited himself to saying that the perfection of the language adds much to the clearness, facility and power of reasoning, and consequently notably to the progress of science, he would have been correct; but he surpasses, evidently, the limits of truth, when he affirms that all the sciences would be exact if they were expressed in appropriate language. He takes, in this respect, the shadow for the substance—the image for the reality; and, by this mistake, he diverts, so far as he is followed, the human mind from the route which leads to discoveries in the science of observation. The proposition of Condillac would be more exact if it was reversed; so that it might be said without being paradoxical, that the more a science approaches exactness or truth, the more its language acquires perfection; which reminds us of this axiom of the legislator of the French Parnassus:

> Ce que l'on conçoit bien s'édonce clairement,
> Et les mots, pour le dire, arrivent aisément.*

Thus, the poet shows himself a more profound thinker than the philosopher.

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* What is well conceived is announced clearly,
And the words to utter it flow easily.

SECOND PARADOX.

Analysis is the sole method for the acquisition of knowledge. Such is the proposition of Condillac, developed in several chapters, which he strives to establish by an argument that he believes irrefutable. We will now see how far he has succeeded.

According to this philosopher, analysis consists in decomposing, in the first place, the object which it is desired to comprehend, in order to study separately each of its parts or qualities, as well as their mutual relations; afterward, to connect all these qualities or parts in their natural order, so as to contemplate the same object as a whole. He cites, in this view, the following example: "I will suppose," he says, "a castle which overlooks a vast and fertile domain, where nature has been pleased to spread a great variety, and where art has availed itself of these natural advantages, to embellish it still more. We reach the chateau during the night; the next day the windows are opened, just at the moment when the sun begins to gild the horizon, and in an instant afterward they are closed again. Although the scenery was exhibited to us but for one moment, we have certainly had a view of the whole. But this first sight does not suffice to make us acquainted with it—in other words, to look separately at the objects it contains, and therefore, it would be impossible for us, when the windows are closed, to give an account of what we have seen. This illustrates how we may see many things without learning anything.

"Finally the windows are opened again, not to be closed as long as the sun is above the horizon, and we see again, for a long time, what we saw before. But if, like men in extacy, we contemplate all at once the great multitude of different objects before us, we shall know no more when the night comes than we knew after the first glance we obtained of them in the morning. To get a clear knowledge of that scene, it will not suffice, then, to look at every part at once—the parts must be studied in succession; and, instead of embracing the whole in a single *coup d'œil*, it is necessary to pass successively from one object to another. This is what nature teaches all of us. We commence, then, by the principal objects; we observe them successively, and compare them, in order to judge of their relations to each other. When, by this means, we have recognised their respective situations, we observe, progressively, all those that fill up the intervals, or compare each one with the nearest principal object, and determine from this, its position. Then, only, we separate all the objects whose form and situation have been comprehended, and embrace them all in a single view.

"If, now, we reflect on the manner in which we acquire knowledge by sight, we remark that any very complicated object, such as a vast landscape, is, so to say, decomposed, since we comprehend it only if its parts have presented themselves one after another, to arrange themselves in regular order in our minds. We have shown in what order this analysis takes place. The principal objects first strike our minds, then the others follow, and arrange themselves according to the relations they bear to the first. We make this mental analysis, only because an instant is not sufficient for the study of all these objects; but we decompose, merely to reconstruct; and when the knowledge of the whole is acquired, its parts, instead of being successive, have in the mind the same simultaneous order which they possess in reality. In this simultaneous order, consists the knowledge which we possess of them, for if we could not recall them as a whole, we would never be able to conceive the relations which they have among themselves, and we would have, therefore, but an imperfect knowledge of the objects."

If analysis consists, as Condillac pretends, in decomposing an object into its elements, and at once recomposing it, what then is synthesis? The response to this question seems to me difficult; I seek in vain for it in the writings of that philosopher; I find nothing there clear and satisfactory. "Synthesis," he says, "is a dubious method, which commences, always, where it ought to end. I cannot give a more precise notion of it, either because I do not comprehend it, or because it is not possible to do so. It escapes examination because it assumes the mental characteristics of all those who employ it, and especially of illogical minds." *

P. J. Barthez, of whom we shall speak at length hereafter, has better comprehended and defined synthesis; though he has but briefly alluded to it. He expresses himself on the subject as follows: "Condillac, in what he has said on analysis, in various places in his Art of Thinking, gives what he terms analysis, so extended a sense that it includes, also, synthesis, or the recomposition of analysed objects. The denomination of the analytic method becomes, then, so vague that it may be said that analysis is employed in all the operations by which any discovery is made in natural philosophy. The method which Condillac terms analysis, has nothing in it truly analytic, except the decomposition which is made at first of the qualities or elements of the object to be studied." †

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* Logique, part II., chap. VI.

† Nouveaux Eléments de la Science de l'Homme. Paris, 1806, Preliminary Discourse, sect. I., note iv.

This passage of Barthez is very important; for it not only shows us in what synthesis consists, but also why Condillac is embarrassed when speaking of that method. It is clear, that this metaphysician, having comprised under the name of analytical method, both analysis and synthesis, that is to say, the decomposition and reconstruction of the object under consideration, there remains nothing for him to say, when he wishes to define the synthetic method; for this reason he indulges in pure declamations.

Synthesis, according to Barthez, and according to the etymology of the word, consists, then, in the reconstruction of the object which has been decomposed by analysis; it is the necessary complement of analysis, and its proof. Thus, when a chemist has decomposed a substance—a mineral water, for example—and when he has studied all its elements separately, he should afterward reunite them, so as to reconstitute, if possible, the primitive substance, in its natural state. It is only after reproducing, by synthesis, the natural compound, that one is sure of the exactness of his analysis. The following is a brilliant example of the satisfaction received by the mind by the alliance of synthesis with analysis: If a solar ray is permitted to penetrate a darkened room, and is received on a prism of triangular crystal, this ray forms, on the opposite wall, an elongated, finely-colored image, with all shades, from red to violet. Then, if a thin board, pierced with seven holes, be interposed between the prism and the image, termed the solar spectrum, there appear, behind this diaphragm, seven circular images, presenting the red, the orange, the yellow, the green, the blue, the indigo, and the violet. To be assured that these seven colors, thus obtained, are, in fact, the constituent parts of the luminous ray, all of them may be converged on the same surface, by means of reflecting mirrors, in such a way that white light is produced again.

I agree with Condillac, that synthesis united to analysis, is the best, yea, the only method, to acquire exact notions of nature; and this metaphysician was only wrong in confounding, under a single denomination two different things; but this mistake draws him into more than one error. When he advances, for example, that the ancients, Aristotle among others, did not know analysis, he is strangely deceived; for not only did Aristotle employ, frequently, the analytic method, but he also greatly abused it. The reproach which, rather, should be made to the philosopher of Stagyrus, and to all the physicians of antiquity, is, not to have verified the results of their analysis by synthesis; or for having been contented with a mental analysis, where they should have employed a material one. Thus, when they affirmed that all bodies were formed of four elements—fire, air, earth, and water—they should have been

able to prove, materially, the existence of these four elements in each body, and reconstruct again the body, by bringing together its constituent elements.*

I have dwelt somewhat at length on the errors of Condillac, in regard to the analytic method, and the influence of language; because the doctrine of this philosopher reigned almost exclusively, in France, during the last half of the eighteenth century, and the beginning of the nineteenth, and because it is still predominant, and is very seductive, by its clearness, simplicity, and the logic of its deductions; hence results the necessity of guarding the public against the illusions which it has a tendency to foster.

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### § III. On Rationalism, and Reasoning by Deduction.

In reasoning by induction our minds associate a quantity of particular facts, united together by certain analogies, and draw from their relation a more or less general conclusion. Example: put carbonate of potassa into water, it is dissolved; put into the same fluid a sulphate, a nitrate, in a word, any salt, with potash as a base, and all will be dissolved. From the sesuccessive experiments, sufficiently often repeated, you will be right in drawing the general conclusion, that all the salts of potassa are soluble in water.

In reasoning by deduction, on the contrary, we proceed to draw from one fact, or a simple proposition, a series of propositions, which follow each other so logically that they seem to flow from the first, as a common source. Example: a triangle is a surface bounded by three right lines. From this definition the geometricians are able to deduce a great number of curious and useful theorems.

Reasoning by induction, and reasoning by deduction, or, if you please, the inductive and deductive methods, have each their particular advantages and inconveniences, which render them more or less valuable in different sciences. Natural philosophers, chemists, and physicians prefer the inductive method, and draw from it excellent practical rules;

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* We have seen, in one of the Hippocratic books, a commencement of the material proof of the existence of the four elements. The author of the book cites the example of the results in burning green wood: he saw the igneous element in the flame; the aerian element in the gas, that sometimes escapes with noise; the aqueous element in the water which stews out, and, lastly, the terrestial element in the ash or residuum. But this gross attempt at chemical analysis lacked the proof of synthesis. Besides this, the author commits the common error of inferring general from particular facts.

but they should not forget that a single experiment badly made, or omitted, suffices to vitiate a general conclusion. The metaphysicians, moralists and mathematicians reason nearly always by deduction and we are indebted to this method for the finest precepts in morals and natural religion, the base of all society; we owe to it, also, the invention and perfection of mathematics. But it must not be forgotten that if the primitive proposition is not of incontestable certainty, or if the least error, or the slightest omission occurs in the propositions which follow, the entire structure falls.

René Descartes, born at Hague, in Touraine, in 1596, exhibited in early life an independent and creative genius. He had already distinguished himself by important discoveries in physics, astronomy, and especially in mathematics, when he undertook to effect, by the method of abstract reasoning, in opposition to that of Empiricism, a reform in philosophy, an enterprise whose results were brilliant and immense, and which created, says the historian of philosophy, Tenneman, admiration as well as a very lively opposition. Descartes commenced, like Aristotle and Bacon, by ignoring all existing knowledge. "To attain the truth," he says, "it is necessary to free ourselves at one time in our lives, from all the opinions which we have previously acquired, and reconstruct anew from the foundation the whole system of knowledge."† This precept, old though it was, appeared as a bold novelty, and made a great noise in the learned world, to such an extent had they lost the habit of the methodic doubt, particularly in philosophy.

This fearless metaphysician did not limit here his reform in regard to method; he overthrew, with a single stroke, the whole framework of the Peripatecian logic so subtily elaborated by Aristotle, that pedantic apparatus capable of retarding the advancement of the human mind, but unable to prevent it from falling or going astray. "In my examination," he says, "I observed that logic, its syllogisms, and the greater part of its teachings serve, at most, to explain to others things which they already know, or yet, like the art of R. Lulle, to speak without judgment of those things of which they are ignorant, rather than to teach them."* He replaces this complicated logic by a simple and sure rule, of which the following is the substance: the mind may affirm of a thing all that is embraced in the idea of that thing, or, evidence is the only certainty of the truth of our judgment.‡

* This sentence is repeated in various ways, in numerous passages of his writings.

† Discours sur la Methode.

‡ Condillac has defined this rule more clearly by showing that evidence consists in the identity of the propositions which follow each other.

Having thus cleared the ground from every species of prejudice, and having created a method easy for the arrangement of the materials of thought, Descartes attempts to rebuild the edifice of human knowledge, by starting from the phenomenon of consciousness: *I think*, from which he draws, at once, this consequence: *therefore, I exist.* From this he rises, by a series of deductions, to the most sublime moral truths; but I shall not follow him in this region, because it does not belong to my subject, and, therefore, I pass, at once, to the physical phenomena. Descartes takes, as the basis of his cosmogony, this proposition of the Pythagorean philosophy: matter is inert, and has, of itself, no form or energy. It is possible, that, at bottom, this principle is true; but, if we consult observation, which must be the point of departure of all reasoning in physics, we shall agree that it proves the contrary of the Cartesian principle. Up to this time, chemistry has not been able to discover any matter absolutely inert; that is to say, matter deprived of properties, and susceptible to acquire all those which it might be desirable to give it; for, this would be the philosopher's stone, the primitive matter so much sought after by the alchymists.

The illustrious philosopher of Touraine has placed himself, from the first, outside of the real world; I shall not, therefore, follow him in his brilliant fictions, but shall content myself here, in offering to my readers, a small part of his physiology, to show how little it is conformed to observation: "I assume," he says, "that the body is nothing more than a statue or machine of earth, which God forms expressly to make it as similar to us as possible. Thus he gives to it, externally, not only the color and the shape of all our members, but, also, he puts within it all the parts which are requisite, to enable it to move, eat, respire, and, in short, that it be able to imitate all of these functions, which may be imagined to proceed from matter, and to depend only on the disposition of the organs."*

Behold a machine perfectly organized, possessing all the material conditions for the exercise of its functions, but which, nevertheless, according to our physiologist, accomplishes none. This hypothesis is also in opposition to daily observation and common sense. When a child is born, well-formed, that is to say, with all the apparent conditions necessary to life, we cannot conceive that it does not live; and, if by accident it is dead-born, we are always moved to ask, why it is dead, or in other words, what is the material obstacle which prevented it from living? Let us follow, however, the hypothesis of Descartes, to see where it will lead us.

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* Partie philosophique des Traite de l' Homme.

"If you have ever had the curiosity to observe the organs in our churches, you know how the bellows forces the air into certain receptacles, which, I think, are named air-chambers; and how this air enters into the different pipes, accordingly as the organist touches the keys of the instrument. Now you are able to conceive, that the heart and arteries, which force the animal spirits into the cavities of the brain of our machine, act like the bellows of the organ, which force the air into the air-chambers; and, that, exterior objects acting upon the nerves which they excite, cause the spirits contained in these cavities, to pass from them into some of the pores, and thus resemble the fingers of the organist, who, according to the key which he touches, makes the air enter from the air-chambers into some of the pipes. Now, as the harmony of organs does not depend on the arrangement of their pipes which are visible, nor upon the shape of their air-chambers or other parts, but solely upon three things, viz., the air which comes from the bellows, the pipes that give sounds, and the distribution of the air in those pipes: so, also, I assume, that the bodily functions in question, do not at all depend on the external shape of the visible parts which the anatomists distinguish in the substance of the brain, nor upon that of the cavities, but solely upon the spirits which came from the heart, the pores of the brain through which they pass, and the manner in which these spirits are distributed in these pores, so that it is only required of me to explain here, in order, all that there is most important in regard to these three things."*

The tendency of our philosopher to throw himself outside of sensible phenomena is here still striking. Three things appear to him only necessary in the study of physical man, namely: the spirits that come from the heart, the pores of the brain which give them passage, and the manner in which these spirits distribute themselves in the pores; now, not one of these three things is tangible. On the other hand, he annihilates completely the study of anatomy, in affirming that the play of the human organs does not depend at all on their external conformation. I doubt if many naturalists and physicians would subscribe to such a doctrine. This example shows us how dangerous it is to attempt the explanation of physical phenomena by means of pure thought; for the method preferred by speculative minds conducts us almost inevitably into the imaginary world, and causes us to loose sight of observation and reality. To go back to the primordial fact of our existence, and from that fact deduce all the others by a rigorous chain of propositions: such has been, in all times, the utopia of strong imaginations,

* Partie philosophique des Traite de l' Homme.

and men of transcendental genius. Many great minds, before and since Descartes, have failed in the enterprise, and many more will yet fail. But Descartes has rendered an eminent service to philosophy in ridding it of its scholastic apparel, and replacing all the rules, so complicated, of Peripatetic logic, by a single safe and easy rule.

Leibnitz, a universal genius, and eminently a generaliser, who shares with Newton the glory of having invented the differential calculus, conceived, from his sixteenth year, the project of a universal alphabet, which would represent all possible shades of thought, with the same precision and the same generality as the algebraic characters represent the relations of numbers. "It is only requisite," he says, "to find certain terms or forms with which to announce metaphysical propositions, which terms could serve as a guide in this labyrinth, in order to resolve the most complicated questions by a method similar to that of Euclid, preserving always that clearness, or that distinctness of ideas which the vague and undetermined signs of our common languages do not permit." He dreamed all his life of this great problem, and died without having found its solution, though convinced of the possibillty of arriving at it.* Descartes had, also, this conviction, for he wrote in one of his letters: "Ideological characters might be invented to express all thoughts, as has already been done for arithmetic and music; but to do this, it would be necessary to analyze all simple ideas, and apply to them signs which would imitate, in their combinations, those of our *thoughts*."† These two great men then imagined that, by perfecting the language of metaphysics, the same precision could be given to this science as is given to mathematics. In this they committed an error, which Condillac renewed at a later period, though he adopted a philosophic method wholly contrary—an error which we have already sufficiently refuted.‡

Leibnitz, knowing the objections which had been raised against the system of Descartes, and the singular consequences which had been deduced from it, by the spiritualist, Malebranche, on one hand, and the materialist, Spinosa, on the other, thought to guard himself from these various difficulties by choosing for the basis of his cosmological theory,

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* Works of Leibnitz, v. II, p. 49. Historia et Commendatio Linguæ Caracteristiæ Universalis, p. 535.

† Letter 46.

‡ Godfrey William Leibnitz was born at Leipsic, in 1646, or four years after the birth of Newton. He was, incomparably, says Cuvier, the most encyclopedic mind that has appeared since Aristotle.

a hypothesis diametrically opposite to that of the French philosopher. This latter had started with the generally received opinion of his time, that matter is homogeneous and completely inert; the German philosopher took, as a point of departure, the observed fact, that there only exist in nature individual beings, and that each individual differs from all others in some particulars. To explain this diversity, he supposes that the germs of all living beings having been created from all eternity, never perish; that they only enlarge and become visible, when we say that they are born; and that they only diminish and cease to be apparent, when we suppose that they die. He gives to these imperceptible and invisible germs the name of monads. He developes his hypothesis as follows:

"Very exact experimenters have already perceived in our time, that it may be doubted if an entirely new species of animal is ever produced, and if all animals are not already living in a minute state before conception, in the semen of animals, as plants are in their seed. This doctrine being accepted, it would be reasonable to suppose that what has no commencement of life, has also no ending of it, and that death, like generation, is only the transformation of the same animal, which is sometimes augmented, and sometimes diminished. What opens to us, still, the marvels of the divine artifice which no one has ever supposed is, that the machines of nature, being machines even to their most minute parts, are indestructible, on account of their enclosing a little machine in a greater one, *ad infinitum*. Thus, we find ourselves obliged to accept, at the same time, the pre-existence of the soul, like that of the animal, and the subsistence of the animal like that of the soul. In this way we perceive that not only the soul, but also the animal must always subsist in the ordinary course of things."*

The reader must have already remarked that there is a resemblance between this system and that of Pythagoras on the transmigration of souls. In vain does Leibnitz deny this similitude; the subtile distinctions by means of which he strives to show the difference, prove, themselves, that there exists analogy between them, if not identity. The system of Metempsychosis is too little known to us; it has been too much disfigured by successive traditions for us to be able now to form a decisive judgment on the exact degree of its homogenity with any modern system. But if this homogenity were proven—far from constituting an unfavorable precedent for the system of monads—it would, on the contrary, sustain that doctrine, by showing its origin in the

* Considerations on the Principle of Life.

remotest periods. The strongest objection to the hypothesis of monads is, that it is not founded on any observations, and is offensive to our common sense.

"Leibnitz," says the historian Tenneman, "was led to his philosophic system by a profound comparison of the most celebrated systems, placed in relation with the demands of his epoch by an imagination fertile in ingenious hypotheses and full of sense, as well as in means of reformation and concilliation; finally, by his great learning in mathematics. His aim was to rebuild philosophy, so that it might boast of a precision analogous to that of mathematics, and put an end to all the disputes of the various schools, as well as to those of theology, by occupying, itself, this ground. He dreamed then, principally, to perfect his method, and to establish some positive principles, in the hope of removing the causes of dissensions among the opposing sects. In short, he thought that philosophy should be treated like mathematics. In this respect he favored the demonstrative method, and the system of rationalism, as Plato and Descartes had believed it to be.

"Leibnitz has nowhere given a complete exposition of all parts of his system; each of his doctrines remained more or less separated from the whole. His ideas are, for the most part, the result of a certain kind of analysis and combination, or of a learned artifice to reconcile the difference between theology and philosophy, and of an exclusive and incomplete examination of the faculty of understanding. Preoccupied with the idea that by thought we may arrive at the knowledge of the reality of things, he addressed himself to the understanding alone, as Locke had addressed himself to sensibility alone—to discover the absolute principle of life and knowledge. Thereby, he confounds the logical possibility and reality with positive reality; he intellectualizes the phenomena, and ignores the part which observation plays in the acquisition of knowledge. Nevertheless, his philosophy, full of bold hypotheses and superior views, has made new steps in science; it has put in circulation a crowd of new ideas, with so much more success as it was published in the French language." *

We have I think, sufficiently established, by the example of Descartes and of Leibnitz, to whom we may join that of Plato, and many other authors who have been cited in the course of this history—we have, I say, sufficiently established how the deductive method is deceptive in regard to physical sciences, and how it tends to separate us from the material reality of the observation of phenomena. It should be now

* Manuel de l'Histoire de Philosophie, translated from the German by Victor Cousin. Paris, 1839.

demonstrated for us, that this method is not anything like as sure as that of induction, in this particular order of knowledge.

Kant, rendered circumspect by the shipwreck of so many superior minds turned his speculations toward another object: in place of seeking the origin or essence of things in themselves, he proposed to determine what is the mode of comprehension of the human mind, and what are its natural limits. He devoted himself, for the attainment of this aim, to the most patient and profound examination of which the annals of philosophy have any example, and after forty years of meditations, he published the result he had reached, which is summed up as follows, relative to the knowledge that we are able to acquire of sensible things: *Reason was only given to us to form experience; and our mind, in desiring to pass the limits of sensation, in phenomena of the material order, mistakes its rights, as well as its powers.**

This result is very remarkable, and merits our fixed attention, for it offers, under another form, the confirmation of the aphorisms of the Sensualist philosophy, which we have heretofore announced. Thus, Kant, starting from idealism, that is to say, from the pole opposite to that of Locke, arrives at the same conclusion as the former, relative to the knowledge of sensible objects; he stops at the same limit, also—the sensations—in the domain of the physical sciences. This was a fact important to establish, and which should give us an entire confidence in the aphorisms heretofore stated.†

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### § IV. Conclusion.

This rapid and very incomplete sketch of the history of philosophy, during the last two centuries, shows us two sects of philosophers, seeking the truth by two different ways. The one, more particularly addicted

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* Critique de la Raison Pure.

† The reform introduced by Kant, in philosophy, relates principally to moral and metaphysical ideas, for which the doctrine of Locke does not offer a solid basis. Emanuel Kant was born in Königsberg, in 1724, and died while professor in the same city, in 1804. "He was," says Tenneman, "a second Socrates, who, by a new method, reanimated the mind for researches, taught it to know its whereabouts, and led reason into a scientific route, by teaching it to know itself. Possessed of rare talents, cultivated and developed with care, he rendered himself worthy of such a vocation. His moral and religious character prevented him from following pure speculation, and made him the impersonation of his doctrine. A constant love of truth, joined to the purest moral disposition, was the soul of his philosophic genius, which united, in an eminent degree, originality, strength, depth, and sagacity." (*Man. de l'Hist. de la Philosophie*, T. II, p. 225.

to the study of the physical sciences, connects all our ideas with sensations, assuming to deduce from that source, not only the knowledge of sensible objects, but also that of moral and religious truths, such as the existence of God, the free will of man, etc. Their favorite mode of reasoning is that of induction; but they also make use of syllogisms. They have been called *sensualists*, because they regard the sensations as the basis of all our acquirements; *empirics*, because the rules which they trace have for their object, to direct experience, and take their foundation in observation. Their method is the most favorable for the advancement of the natural sciences, properly said; it was adopted by the greatest philosophers or naturalists of antiquity and modern times, such as Aristotle, Galileo, Newton, Linnæus, and Cuvier. It should be preferred in medicine, for it is according to it that the philosophic aphorisms, or axioms, were established, which guide us in the appreciation of medical doctrines.

The other sect, more attentive to the phenomena of pure thought, or consciousness, endeavors to comprehend the material world by the same plan, and desires to explain physical phenomena by the laws of the mind. They have been called *idealists*, because they pretend to deduce all our knowledge from ideas; *rationalists*, because the rules which they trace have for their object the direction of reasoning. They proceed, ordinarily, by the deductive or syllogistic method. Now, we have seen the deceptive nature of this method in the physical sciences; how it tends to divert our attention from the real world, and carry it to the fictitious world. Nevertheless, the metaphysician of Königsberg attained by this route the confirmation of the aphorisms which the sensualists had formed; which proves that no method necessarily leads either to error or truth, in any department of knowledge. The deductive method is more favorable than the inductive one, for the discovery and demonstration of moral and metaphysical truth; it has generally been preferred by the great moralists and profound thinkers of every age, such as Plato, Descartes, Pascal, Leibnitz, Kant.

Nearly all the philosophers of both sects, charmed by the infallibility of mathematical propositions, strove to imitate the mathematical mode of reasoning, hoping to reach by it convincing demonstrations, and be sheltered from all controversy. Vain efforts! they pursued a chimera which it is permitted to no man to attain; the essence of things cannot be changed by formula of language or reasoning. If they had well reflected on the nature of mathematical propositions, they would have perceived that their character of certainty does not depend either on the signs or the method which mathematicians employ; but upon the nature itself of the propositions, which is such that they reach our understandings

by the double way of experiment and pure reason, which leads to the conviction of our minds in an irresistible manner, without leaving any open door to doubt or hesitation. Let a geometrician, for example, take the hight of a tower by a trigonometrical process, and afterward measure its hight with a line; he will find by these two processes nearly identical results, which will confirm in his mind the demonstrability of the theories of trigonometry. For ages the predictions of astronomers, on the appearance and duration of eclipses, are verified with a punctuality which must inspire us with full confidence in the exactness of their theories and calculations. Experimental proof, it may be said, adds nothing to the certainty of the theoretic demonstrations of geometry. That is true, but the experimental proof adds to the conviction of the mind; it strikes the ignorant like the learned—forbids doubt and dissipates obscurity.

It is not the same with the other sciences: in examining them carefully, we shall see that none of them shares with mathematics the privilege of seizing upon our understanding by the double route of reason and experiment. Moral and metaphysical truths, for example, are not susceptible of any experimental demonstration; it is only by reason that we prove the existence of God, his infinite attributes, the immortality of the soul, the blessedness of virtue, etc. Physical truths, on the contrary, cannot be demonstrated in any other way than by experiment; thus, the property possessed by acids, of uniting with alkalies to form salts, has been ascertained and can only be proved by experiment. Thus, observation alone has shown, and proves every day, that the abuse of alcoholic drinks enfeebles the brain; but our intelligence cannot define any necessary connection between these causes and their respective effects. It is the same for all the phenomena of the material universe which are not within the range of mathematics; these phenomena, as well as the laws which regulate them, can only be demonstrated by experiment.

I could have wished to spare my readers this digression into the field of philosophy; but it has appeared to me indispensable, and I hope will not prove unfruitful. It has furnished us, in the first place, with an occasion to make choice of a method with discernment; then it has shown us the limits where must be arrested our faculty of acquiring knowledge of sensible things; finally, we have established some aphorisms, which, like guide-posts planted on the route which we are to follow, will direct us in the examination of medical doctrines, and abridge considerably our labor.

### ART. II. SOURCES OF ANIMISM AND CHYMIATRIA.*

Among the men who contributed the most to discredit the ancient doctrines, and to introduce the taste for novelties in Medicine, we shall cite, in the first place, John Baptist Van Helmont, Lord of Merode and of several other estates. He distinguished himself early by his application to study, his piety, and the independence of his opinions. At the age of seventeen years he was offered the degree of master in philosophy, but he refused it; knowing, he said, that his head was furnished with words only, and he was not willing to be dubbed master in the sciences, when he was scarcely a scholar. Having renounced the academic dignities, and the schools where futile matters only were taught, to devote himself, in all the independence of his genius, to researches after truth, he read at first the writings of the pagan philosophers, and acquired some taste for the doctrines of the stoics; but afterwards the books of Thomas a Kempis and of John Taulerus falling into his hands, decided his inclination toward mysticism. "I saw," he said, "that all truth and wisdom comes from God, to whom man unites himself by prayer, contemplation, and good works." Henceforth he studied to regulate his conduct by the example of Jesus Christ; and in order to copy closer this divine model in the relief of human misery, he resolved to study Medicine.

He embraced this study with the ardor of an enthusiast and the obstinacy of a fanatic; he consecrated to it thirty consecutive years, and after having read, annotated and extracted from more than six hundred Arab and Latin authors, he found himself in a condition to dispute on all diseases, in a way to excite the admiration of the most skillful. He took, then, the title of Doctor. Afterward, he passed through Italy, France, England and Spain, in short, Europe entire, in order to initiate himself directly in the process of the Healing Art in use in each country, and to collect all the secrets of alchymy. On his return to Brussels, the capital of his country, he divided his time thereafter between the practice of medicine and labors in his laboratory, in which he sometimes shut himself up for entire days. His discoveries in chemistry have secured him a distinguished place in the history of that science; but we can only occupy ourselves at present with his opinions in medicine.

Van Helmont proscribed blood-letting as injurious in all cases; and, without rejecting purgatives in an absolute manner, he made a very moderate use of them. His favorite remedies were opium, wine, and

* Doctrines which assumed, respectively, for all the healthy and morbid phenomena of the economy, the influences of a presiding soul and the laws of chemistry.

compositions which he prepared himself, into which, like Paracelsus and other chemical physicians, he incorporated substances taken from the mineral kingdom.* He cured, with these preparations, certain diseases which had resisted ordinary means; but how many individuals found themselves made worse by the improper use of remedies yet too little proven!

His writings abound in new words and odd ideas, which render their reading fatiguing. We meet there, entire chapters of impenetrable obscurity, so that they form the natural transition from the ramblings of Paracelsus to the learned theories which we shall soon have to examine. Nevertheless, no one could place Van Helmont in parallel with the Swiss thaumaturg, to whom he was superior in all respects, and for whom he professed a profound contempt. Rich in an uncommon erudition, and his own proper experience, the Belgian physician knew how to avail himself of these to sap the prejudices of the schools; and he is never so clear and so precise as when he wishes to uncover the nakedness of the hollow verbiage of the physics of Aristotle, and the physiology of Galen. He asks, for example, on what foundation the schools sustain, with their Aristotle, that the air is humid at eight degrees, and hot at four degrees? By what experiment they prove that condensed air is turned into water, and becomes thus a perpetual food for the springs? At the same time he cites, in support of a contrary opinion, the experiment by which air is compressed in a gun-barrel without exhibiting the least particle of water, whatever the degree of condensation to which it may have been submitted.

But when he abandons the role of the critic, and attempts to found, in his turn, a system of natural philosophy, he falls into such a confusion of ideas that it would be impossible to analyse his doctrine. All that we are able to do, is to report here some of the propositions which appear to form its basis. Van Helmont admits two material principles for all things; the one is water, which furnishes matter, the other is the ferment or seminal breath which gives it form. At other times he says, that the two principles of all created beings are air and water, because they cannot be transmuted into each other. In regard to the earth, he believed that it proceeded from water, by a secondary formation. The *archeus* is a spiritual gas, which gives impulsion to the fecundated seed, by means of a ferment. It regulates, like a skillful architect, all the movements with which the natural body is endowed; and it remains in them until their dissolution. Without it no organized being could acquire the form that is proper to it—everything would be

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*See letter of Guy Patin. Paris, 1846.

confounded, and the universe would re-enter into chaos. Besides the archeus and the ferments, Van Helmont sometimes endows the animal economy with a third motor, which he names *blas*. The nature of this is double; one part produces the natural, and the other the voluntary movements. The stars, also, have a double *blas*; the first moves them in space; the second excites the special revolutions to which their substance is subject. The *blas* of the stars and of man agree with each other; so that we may predict certain atmospheric vicissitudes by the aspect of the infirmities which afflict the human body, and better still by those which are seen in brutes, because the animals were created before man.

If from these general notions we descend, with this author, to the particular functions of each part of the body, we shall find that he accords to the stomach and the spleen a sort of omnipotence over the rest of the body, which he characterizes by the picturesque expression of *duumvirate*. The archeus or conscious soul resides on one or other of these two viscera, and more especially on the pylorus. From this position it directs all the functions of the other organs, watching the integrity of each, and maintaining the harmony of the whole.

There are six digestions: the first takes place in the stomach, by the aid of an acid ferment which the spleen supplies; the second, in the duodenum, where the bile, mingling with the alimentary bolus, changes its acidity into a volatile salt; the third, in the mesenteric veins, where the chyle is transformed into venous blood, otherwise called cruor; the fourth digestion is effected in the heart, by means of heat, agitation, and a particular ferment, which causes the venous blood to become arterial; the fifth digestion takes place in the brain, where the vital spirit is extracted from the arterial blood; the sixth consists in the work of assimilation, which each part executes in appropriating by virtue of its innate spirit, the aliment that is natural to it. With the number seven, nature keeps a sabbath, in other words, rests.

Let us now take a glance at the pathology of this author. When the archeus is offended by any injurious or disagreeable agent, it becomes furious, or it is seized with fear, which produces disordered movements, and the image which this trouble depicts in it becomes the seminal idea of the disease. There are as many species of diseases as there are morbid seminal ideas of different characters, and the primitive seat of all our affections is in the tunic of the stomach, which is the habitual residence of the archeus. Morbific causes were of two sorts, those from without, as miasms, epidemics, poisons, virus, unsound food and drinks, etc.; the others are from within, and consist in some excrementitial matter not evacuated at the proper time.

Fever is the result of extraordinary efforts made by the archeus to disembarrass itself of the morbid idea which troubles it; from this struggle proceed those intervals of excitement and agitation that succeed each other. The chill indicates the state of terror or exhaustion of the archeus; the heat announces the violence of the efforts and struggle which it undertakes. Vesicular calculi are formed by the accidental combination of three sorts of spirits which exist in the urine, in the ordinary state of isolation. The first is a salino-volatile spirit; the second is of a vinous and inflammable character; the third of an earthy nature. The tophaceous concretions in gouty persons are engendered by the synovia, a species of transparent liquor, destined to lubricate the joints, which, in becoming acid, looses its aqueous part, and becomes dry and hard.

In regard to therapeutics, Van Helmont laid down the principle that the first condition for the favorable operation of a medicine was, that it comport with and be agreable to the archeus; then, that it be administered in proper doses and at proper times. He thought that the actual virtue of remedies resides especially in their odors; these being, he said, the symbol of the seminal ferment, and the cause of all the transmutations that are effected in the human body. Besides, he had faith in the efficacy of certain words, as well as in amulets and talismans. He believed in the efficacy of a universal remedy, which he named *alkaest, ens primum, primus metallus,* etc.

Van Helmont had no disciples, properly said; he founded no sect, but several modern medical sects have borrowed their ideas from him. The chemical school owes to him the idea of ferments; the animists or vitalist school, that of the sensitive soul or vital principle, formed on the model of the archeus. The thaumaturgs, the Rosicrucians, and the magnetisers regard him as one of their adepts, or pretend, at least, to find in his writings some traces of their doctrines. The partisans of scholastic traditions never had a ruder adversary. "At an epoch when there were still found on all sides those who held to the doctrines of the middle ages, when the forces of nature, interrogated with fear, seemed always to present themselves under a mysterious and supernatural form, it is not astonishing that the mystical spirit of Van Helmont saw in the ecstacies of his soul, and in his dreams, the revelation of the solution of the most embarrassing problems. Nor is it any more astonishing, that he substituted hypotheses for hypotheses, and errors for errors. The men of those times were, in regard to a thousand questions now clear to us, in the same condition as we are at present, in regard to the difficulties insoluble by our means of investigation. What theory is sufficient for the cure of intermittents by Peruvian bark, the origin of

variola, and the destruction of its germ by vaccine? Who has not made a desperate effort to pierce this obscurity, to get a glance beyond this horizon? Very well, let us turn the eye upon this past, which was their future, or our light, which was darkness to them, and represent to ourselves the false lights, and the gropings of our predecessors—so much easier to go astray, as they had not, like us, a guiding compass, in the method of observation, and as they could scarcely abstain from hypotheses in the absence of facts." *

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### ART. III. IATRO-CHYMIA.

Francis de Lebö, called Sylvius, was the first who pretended to explain all the phenomena of the living economy by the laws of chemistry alone. He was in his forty-fourth year, and enjoyed the reputation of being the most skillful physician in Amsterdam, when he was called to teach practical medicine in the University of Leyden. Before his time, the professors contented themselves by reading from the chair, and commenting upon, before their pupils, the most renowned authors. Lebö had the happy thought of admitting his young auditors to visit the sick in the city hospital, and to choose for the subject of his lectures the diseases they had before them. He was thus one of the originators of clinical teaching, and it is to this day his best claim to distinction. He cultivated, with signal success, anatomy and chemistry, and at the epoch when the discovery of the circulation of the blood excited the whole medical world, he was one of the first to declare himself in favor of the doctrine of W. Harvey, and sustained it by new proofs, drawn from the examination of dead bodies. In short, he was accustomed to recommend anatomy, chemistry, and clinical observation, as the true basis of medical instruction. This celebrated iatro-chemist died in 1672, aged fifty-eight years.

Sylvius declared, in substance, that nothing must be held as true, in medicine, which had not been confirmed by the testimony of the senses—an opinion conformable to our *fifth* philosophic aphorism. We will now proceed to see, if in the development of his physico-pathological theory, he is always true to this wise maxim.

#### PHYSIOLOGY.

He describes the act of digestion as follows: The food, he says, is at first triturated in the mouth, where it is impregnated with saliva, a liquid endowed with great fermenting properties. Thence it descends

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* M. Littré, Journal Hebdomadaire de Médécine, Paris, 1830, T. VI., p. 413.

into the stomach, and there encounters the residuum of the preceding digestion, a species of leaven very favorable to stomachal digestion, by means of which it undergoes a second preparation; after which it passes into the intestine, in the form of a viscid and whitish humor. A little below the pylorus this alimentary humor undergoes a third fermentation, by the united action of the bile, pancreatic juice, and the saliva. Then the purest and most fluid part separates from the thickest and crudest part. The latter, carried on to the large intestine, takes the form and name of feces, while the other, deprived of its excrementitious matter, is termed chyle, and goes through the lacteal veins to the thoracic canal, where it unites with the lymph. The humor resulting from this union is carried to the vena cava superior, where it is mingled with the blood, and communicates to that fluid its nutritive quality. The venous blood, thus restored, reaches the right cavities of the heart, and thence goes to the left cavities, by traversing the lungs. In its passage through the lungs, the blood undergoes a last effervescence, which brings it to its highest degree of perfection.*

This description of the function of digestion is distinguished from that of Van Helmont by much greater anatomical exactness, and by no intervention of the archeus. The saliva, bile, and pancreatic juice, have in this the active agency—an agency that Sylvius denominates *triumvirate*. The bile, he says, which holds the first rank, owes its virtue to an alkaline salt, tempered by an oily, volatile spirit. The saliva obtains its virtue from the acid and volatile spirit that enters with water into its composition. The pancreatic juice owes its activity to an acescent volatile spirit.

The animal spirits are extracted from the blood, which reaches the cerebrum and cerebellum by the carotid arteries. This liquid in penetrating into the capillary vessels loses its watery part, which is filtered through the pores, and acquires a character that very much resembles the spirit of wine.

Thirst arises from the saline exhalations that rise from the small intestines, through the stomach to the throat, where they excite a sensation of dryness. These exhalations are the product of effervescence of acid bile mingled with the pancreatic juice. Natural hunger arises at first from the fermentation engendered in the stomach by a mixture of the residue of alimentary residuum with the saliva that we continually swallow. This fermentation developes a *halitus* of an agreeable acidity, which titillates softly the superior orifice of the stomach, and creates the desire for food.†

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* Sylvii Praxeos Medicæ Idea Nova, cap. x., §§ 2, 3, 4. † Ibid.

PATHOLOGY.

The immediate cause of continued fevers is referred to a vice in the bile or lymph; a vice which is calculated to excite in the right ventricle of the heart an increase of effervescence, from which results the continual vehemence of the pulse.

The cause of intermittent fevers consists in the excessive acrimony of the pancreatic juice. By its mixture with the bile and pituite, this vitiated juice provokes an abnormal fermentation, which occasions a chill, more or less marked, until the bile, flowing in its turn in abundance, causes an increase of caloric in the right cavities of the the heart, and creates a heat to succeed the chill. However, in whatever way the thing takes place, it appears beyond all doubt, that the algid period in all fevers arises from acidity of the pancreatic juice or lymph, while the hot period is the effect of the bile, whose alkaline salt united to oil conserves and developes eminently the element of fire.

THERAPEUTICS.

It is on the hypothesis that we have just read, and other similar ones, that Sylvius founded his curative indications; he opposed purgatives to diseases proceeding from the effervescence of the bile; he pretended to correct the acridity of that humor by opium and other narcotics; he was prodigal in volatile salts and diaphoretics, sometimes with the purpose of combatting the acidity of the lymph, or the pancreatic juice; again, in order to arouse the sluggishness of the vital spirits, and favor the secretions. In a word, he created an incendiary medicine, based on a fictitious theory, which he believed in good faith to be the only pure expression of the truth.

But if we judge this theory by the light of the philosophic principle which he himself has laid down in the beginning, and which consists, as must be recollected, in holding in Medicine as true only what is attested by the testimony of the senses, we shall find that it is very far from fulfilling such a condition. In fact, of the three humors that constitute his physiological *triumvirate*, one only, the bile, possesses in a very feeble degree the alkaline quality that he attributes to it; the other two, namely, the saliva and the pancreatic juice, do not at all appear endowed with the acidity that he attributes to them, and by which he assumes their co-operation in the digestive act, as well as in the generation of diseases. It might also be asked, on what direct observation he bases himself, to affirm that the animal spirits are distilled in the capillary tubes of the encephalon, like the spirits of wine; or, for teaching that the acidity of the lymph, or the pancreatic juice produces

the fever chill, and that the return of the heat, or reaction, is due to the acridity of the bile. Finally, his whole system is radically wrong, on account of its insufficiency and errors; and no account is taken in it of the state of the solids, or their action.

We must believe, for the honor of a practitioner so renowned as Sylvius, that he departed somewhat from his theoretic prejudices at the bedside of his patients, and that he remembered there that sentence which he had himself emitted: How many of the specious and reasonable things, in theory, are known to be vain and faulty in practice!

His doctrine made rapid progress in Germany and in England, but it obtained less favor in France and Italy, where the partisans of the ancient Dogmatism opposed it with a lively resistance. The novelty of the phenomena on which he rested, the small number and clearness of his principles—the facility of their application in the treatment of diseases, were all well calculated to seduce enthusiastic minds, anxious for a change. Besides, as we have already remarked, the circumstances were favorable for all attempts at innovation in Medicine; for the antique edifice of the Healing Art was yielding to the attacks on all sides.

Thomas Willis, cotemporary of Lebö, and a still more celebrated anatomist than he, contributed more than any other to the propagation of the taste for chemical explanations among physicians. After having taught natural philosophy for six years, and practiced medicine with distinction at Oxford, he resigned his chair to go and exhibit himself on a much greater theater. He moved to London, and became, in a short time, one of the most distinguished practitioners. Being adjunct to the College of Physicians of that capital, he gained the friendship of his colleagues, by the integrity and gentleness of his character, as he merited their esteem by the extent and variety of his learning.

The system of this *iatro-chimicus* differs notably from that of Lebö, though established on the same order of considerations. Willis laid down the principle, that if any substance whatever is submitted to the analysis of fire, it is resolved into spirituous, sulphurous, saline, aqueous and terrestrial particles: from which he concluded that there are five elements, namely: spirits, sulphur, salts, water and earth. He excluded air and fire from the number of elementary bodies, because they are neither visible nor palpable. "For," he adds ironically, "my intelligence is obtuse, and my reason cannot penetrate beyond the reach of my senses." We perceive that most of the physicians of this period accepted, at least in principle, the aphorisms of the Sensual Philosophy; but they were not in the habit of submitting to them their medical theories; thus the "spirits" which Willis placed at the head of the elements, do not appear to me in any manner more visible or palpable

than air or fire. Could any one so soon forget the philosophic maxim that he seemed to take for a motto? This is what we now proceed to see.

The "spirits," according to him, are an ethereal substance, extremely subtile, an emanation of the Divine breath, which a benificent providence had placed in the sublunary world, to impress all things with vital action. Sulphur is an element of a little more consistency; it evaporates less promptly than spirits; the heat, shape and beauty of bodies, as well as their colors, aroma and taste, depend upon the proportion of this element. Salt has still more density; it gives to substances weight and solidity, and is the element of their duration and reproduction. Water is the vehicle of spirits and sulphur, and favors their admixture with salt; deprived of this dissolvent, the other elements could form no union. Earth fills the pores of all solid bodies; it hinders a too intimate contact of the active elements, and prevents them from bruising each other—retains by its viscidity those which are too volatile, in fine, gives to bodies their mass and volume.*

Most decidedly, the qualities and functions which Willis ascribes to his elements are not more real than the ancients ascribed to theirs. There is no more reason to believe that heat, beauty, form, colors, aroma and taste come from sulphur, than to admit that air is humid at eight degrees, and cold at four degrees. All is equally fictitious and imaginary; but in this respect, Willis appears to me more faulty than the ancients, for he puts himself in manifest contradiction with his philosophic principles.

Let us follow now the application of his theory to the phenomena of organized bodies, and in particular to the animal economy, as fermentation enjoys here a great *rôle*; let us in advance see what he means by the term: "Fermentation," says our chemist, "is an internal movement of the particular elements of any body whatever, having for its object the improvement of the body or its transformation to another substance. It occurs in the three kingdoms—among minerals buried in the bosom of the earth, as among vegetables and minerals. It is sometimes the effect of art, as well as a natural result."

### PHYSIOLOGY.

The mind perceives the first development of life in the heart; that viscus, whose rapid movements are seen by the eye, offers the representation of a fermenting point—*punctulum fermentescens*. The spirit bounds from this rebounding point *(punctum saliens)* as from a prison; but the sanguineous liquid, which serves it as a vehicle, prevents it

* De Fermentatione Sive de Motu Corporum Inorganico, cap. II.

from flying off, and constrains it to keep on the track; so that the spirit going and coming, unceasingly, from the center to the circumference, cuts out and fashions the arteries and veins that subserve the circulation of the blood in all parts of the body.

The chyle is extracted from the food by coction, which is effected in the stomach by the aid of an acid ferment. "Some pretend," continues Willis, "that this ferment comes from the spleen; but anatomy has not, up to this time, discovered any direct communication between that viscus and the stomach. However this may be, the chyle acquires a milky color by the coction of the sulphurous and saline parts, mingled with the ferment of which I have just spoken."

It was also by the intermediation of a ferment that the animal spirits were separated from the purest sulphurous portion of the blood, in the cortical substance of the brain and the cerebellum. But though the process by means of which this operation was effected was a little obscure it appeared nevertheless demonstrated, that in this circumstance, the encephalon, covered by its bony case, and furnished with its nervous appendages, fulfilled an office similar to that of the upper part of an alembic of glass, enclosing a sponge, for the rectification of the spirit of wine.

In short, each apparatus of the organic body possessed a particular ferment, indispensable to the exercise of its functions, so that it might be said that our life commenced and was sustained by ferments.*

### PATHOLOGY.

If ferments are the source and sustenance of life, they are equally the cause of our death, for they harbor, after Willis, the germs of all diseases. Sometimes, he says, the sulphurous and spirituous parts of the blood are exhaled in excess, producing an ebullition in the vessels like the fermentation of wine, and giving rise to febrile affections of all species; again, the saline part effervesces, communicating to the blood an acid, austere, or bitter quality, which causes it to coagulate in various ways; from this proceed most of the chronic diseases, such as scorbutis, dropsies, lepra, etc.

All the intermittents were due to a superabundance of the non-assimilated digestive juice, which, in circulating with the blood, excites an ebullition which continues until all the morbific matter has been expelled; then only is a calm re-established—an intermission more or less long succeeds the febrile agitation.

Continued fevers are engendered in the following manner; the

* De Fermentatione Sive de Motu. Corporum Inorganico chap. v.

spirituous portion of the blood being agitated or heated, produces an ephemeral fever, or a legitimate synocha. If the fermentation extends to the sulphurous particles, a putrid fever results. In fine, when a poisonous miasm enters into the circulating fluid, it provokes not only the effervescence of the spirituous and sulphurous molecules, but also separates the elements of the blood, giving rise to putridities and strange coagulations, and those alarming and extraordinary symptoms supervene that mark extreme peril, and which characterize malignant fevers—the plague, small pox, etc.

Phrensy consists in the irritation by the spirits of the brain, which, abandoning themselves to confused and disordered movements, derange all the functions of the soul. But when the spirits realize another order of alteration, when, for example, their substance changes its nature and becomes ascesent, sour, or insipid, instead of its former salino-spirituous condition, then, I say, they engender other sorts of madness, such as melancholy, dementia, idiocy, etc.

THERAPEUTICS.

It was also by the aid of ferments that all diseases were cured, and the office of the physician, says Willis, resembles very much that of the butler, who watches that the fermentation of the wine takes place regularly, and removes every foreign substance that would be calculated to trouble it. They act at first on the spirits or their humors; they appease, excite, or change in a thousand ways their fermentative movement; in this way they produce all sorts of effects on the body, the solids of which they modify secondarily.

Such are the principal traits in the medical doctrine of Willis. The reader must have remarked what I announced in the commencement, that they resemble very much those of Lebö, in certain connections, and differ from them in others. The system of Willis was more vast, complicated and subtile than the preceding, was less comprehensive to the vulgar, and, therefore, pleased better, minds accustomed to abstract speculation; but there are at bottom the same defects, and it merits the same reproaches. The English nosologist made no more account of the form and constitution of the solid parts, than did the nosologist of Leyden. Nor did he keep any better the promise he made not to go beyond, in his speculations, the limits of sensible phenomena: he presents to us, on the contrary, a series of deductions purely fictitious, resting on materials, placed, for the most part, beyond our senses. I am then, compelled, in order to justify, in the eyes of posterity, the reputation of this great practitioner, to repeat what I have said in favor of Sylvius and so many others, namely: that they laid aside their

fictitious theories when visiting the sick, and consulted their experience only. I have the more reason to think that Willis acted in this way from what he says on the subject of Peruvian bark, whose effects contradict his theory—that it is better in every case to be guided by observation.

The disciples of these two celebrated men made some secondary modifications in their systems, of which it would be useless here to give a sketch; I therefore pass at once to another class of theoreticians.

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### ART. IV. IATRO-MECHANICS.

The progress of chemistry had given rise to the idea of explaining the functions of organized beings by the laws which regulate the intimate and elementary combinations of crude bodies; so, also, the progress of experimental physics, mechanics, and mathematics, suggested the thought of applying mathematical calculations to the phenomena of the living economy. They were vainly filled with the hope, that they could arrive to the determination, with mathematical precision, of the least vicissitudes in health, as well as the means to remedy them; and to this purpose they devoted themselves to patient and ingenious researches.

Sanctorious was the first who entered upon this path, in essaying to estimate by exact experiments the quantity of insensible perspiration that exhales from the body in a given time. As all the functions of the organism are so bound together that no one can be deranged without the others becoming affected, he thought that each variation in the quantity of exhaled vapor would indicate a shade of change in the general state of the body. This opinion had nothing in itself very unreasonable or unreal; nevertheless, the researches attempted in this sense, by Sanctorious, and by many other observers of the greatest merit, only produced results more curious than useful, and consequently have been abandoned on account of the little benefit which has accrued to the Healing Art.

Alphonso Borelli, professor of Mathematics in the University of Pisa, member of the Academy *del Cimento*, instituted in 1657, by Leopold, prince of Tuscany, for the purpose of propagating the doctrine and method of Galileo, is the veritable founder of the sect of Iatro-mathematicians. It was in the halls of that academy that he read his first essays on the mechanics of animals. Soon after he quitted Pisa, from some particular discontent, and went at first to Messina, where he did not long remain, on account of the political troubles that agitated Sicily; lastly, he went to Rome, where he was welcomed and protected by Christina, ex-queen

of Sweden, to whom he dedicated his famous treatise on Animal Mechanics.

Fruit of patience and genius, this work created a new department in Medicine. Until then, in fact, only vague and erroneous ideas were held, on the sum of the forces expended by animals in their movements, and on the mode of employment of the same forces. Proceeding from the principle that nature attains her ends by the most direct route and the most simple means, it had always been thought that men and animals are constituted in a way to be able to execute great movements and carry heavy burdens by employing the least possible force. Borelli refuted this idea by convincing arguments, founded on anatomy and the laws of statics. Comparing the bones put in play by the muscles, to levers moved by cords, he proved that man expends an enormous quantity of power in his movements. If, for example, there be attached a weight of twenty-six pounds to the extremity of the hand, the arm being extended horizontally, and then be brought to a state of flexion, the biceps muscles must employ, he says, to execute this movement, a power which will not be less than eleven hundred and sixty pounds.* The street porter, having on his shoulders a package of one hundred and twenty-nine pounds weight, consumes, according to the calculations of the same author, a sum of forces equal to 17,266 pounds, when he sustains himself on one foot alone.

However it may be in regard to the exactness of these calculations, which must be accepted only as a very elastic approximation, it is unquestionable that a man developes, in his movements, a muscular energy incomparably greater than the weight he sustains; a truth which was not supposed before the publication of the discoveries of Borelli. His work embraces, besides, a prodigious quantity of fine and new observations on the various modes of rest and locomotion of animals, such different attitudes as standing, sitting, or lying down, walking, running, leaping, swimming, flying, etc. To give only one example in a thousand, he presents a very ingenious explanation of the process by means of which a bird sustains itself while sleeping, resting on one foot only, and supported by a frail branch moved by the wind.

It was, then, not without reason that this author writes at the head of his preface: "I undertake to speak on the mechanism of animals, an arduous subject, which a great number of ancients and moderns have attempted, but which they merely touched. Not one of them has as yet suspected the numerous and interesting problems that belong to it, much less resolved them by rigorous demonstrations." He developes

* De Motu Animalium, chap. x, prop. 35.

then the plan of his work in these words: "This treatise will be divided into two parts; in the first, we shall examine the visible movements of animals, which are affected by the alternate flexion and extension of the exterior parts. ⁂ ⁂ ⁂ ⁂ In the second, we shall search for the cause of muscular movements, and all internal movements, such, for example, as the progression of liquids in the vessels and viscera."

The first part, as may be judged by the above *compte-rendu*, has all the perfection that comports with the lights of the age, and merits eulogy. The second has not obtained as unanimous an approval, though it was, in the eyes of the author, the most essential, and had cost him more pains, more calculations and researches than the preceding.* It includes a complete physiological theory, a summary of which we now proceed to give.

One of the fundamental theorems of this theory is that by which Borelli explains the intimate or immediate cause of muscular contraction. There occurs, he says, a continual flux of the nervous fluid, and of the blood, into the spongy cellules of the muscles. Now, when the sensitive soul, which resides in the brain, wishes to employ the motive faculty, it communicates a simple excitement to the nerves, or rather, it projects throughout the nervous tubes a subtile fluid, called animal spirits. In an instant, the mixture of the nervous juice and the sanguineous liquid which impregnates the muscular vescicles is put in ebullition, and in expanding distends the muscular mass, the extremities of which are forced to approach each other. Our author devotes three long chapters to the development of this theorem, which is the corner stone of his physo-pathic edifice. He compares the effect of the animal spirit on the mixture of the nervous juice and blood which fills the muscular areolæ, sometimes to the spark that flies when the steel strikes the flint; again, the flame excited by friction; or the vapor which escapes when water is thrown on quick-lime; or the effervescence produced when certain acids are poured into alkaline solutions, etc.†

But in vain does he accumulate subtilties and metaphors; all the artifices of language could not change a hypothesis into a veritable fact. Now, no observation has established that any humor flows through the extremities of the nervous fibrillæ, nor, for a much stronger reason, that this humor mingles with the blood in the muscular interstices, or

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* This subject has been studied anew, first by the illustrious P. J. Barthez, in his work, Nouvelle Mecanique des Movements de l'Homme et des Animaux; then by G. and E. Weber, in their Traité de la Mecanique des Organs de la Locomotion, translated from the German, by Jourdan.

† Le Motu Animalium.

of an effervescence, instigated by the animal spirit. What shall we think, now, of the calculation which this author pretends to establish, of the expansive force of the nervo-sanguineous molecules, which, are supposed to fill the muscular interstices? Need we be astonished, that proceeding from this fictitious idea, he arrives at such ridiculous and exaggerated results as the following, viz: that the heart overcomes, at each contraction, a total resistance equivalent to the weight of 180,000 pounds!

He regards stomachal digestion as a simple trituration, which is sometimes facilitated by the concurrence of a corrosive ferment. He explains, in a manner entirely mechanical, the nutrition of parts, or assimilation. The humors, he says, as well as the solids, allow portions of their substance to escape, which evaporate by transpiration, and form little spaces at the points from which the particles are detached. The sanguineous globules, pressed with violence by the heart and arteries, become engaged in these little lacunæ. But all the globules do not enter indiscriminately into all the interstices; each globule insinuates itself into a vacuole, whose configuration is analogous to its own; thus, the osseous globules penetrate the pores of the bones only; the fleshy globules, into those of the flesh; the membraneous, into the pores of the membranes, etc., so that each tissue, receiving the aliment which is appropriate to it, is nourished, and repairs its losses.

All the secretions are explained, in this system, in the same way as as the nutrition. See, for instance, how he represents the formation of the urine. The blood being projected with force through the emulgent arteries, comes, on one hand, in contact with the orifices of the sanguineous capillary tubes, on the other, with the orifices of the urinary canals: suddenly its molecules, united by simple apposition, separate, as in passing through a sieve—the aqueous globules of the urine passed into the proper renal tubes, whose configuration is analogous to theirs, the sanguineous globules insinuate themselves into the veins that are conveniently disposed to receive them, and can not give passage to the urinary globules. "Certainly," exclaims our mechanical physiologist, "as well have faith in dreams and delusions, as to imagine that there exists a magnetic virtue, and particular ferment, endowed with a very subtile discernment, and placed there expressly in the kidney, to separate the urinary from the sanguineous molecules, and dispose each of them in their appropriate reservoirs!"

According to him, respiration is not for the purpose of introducing a new principle into the blood, but to moderate the raging passion of the vital spirit, in about the same way as the balance wheel of a clock regulates the movement of all the wheels by its alternate oscillations.

Respiration has also for an object, to give to the sanguineous globules, which have been changed during their passage through the various parts of the body, their primitive and normal form.

PATHOLOGY AND THERAPEUTICS.

These two branches, so important for medical science, have a very small consideration in the work of Borelli; they are merely mentioned, *en passant*.

This writer attributes all the painful sensations to the itching or irritation of the fibrillated extremities of the nerves. He assures us that fever is produced by the acridity, or by the fermentation of the nervous juice which is diffused in the cellules of the tissue of the heart, and he adds, that this acridity of the nervous juice proceeds either from irritation, or from obstruction of the radicles of the nerves, which are distributed in the glands, and principally in those of the mesentery.

The fever decreases and becomes calm, according to him, when the blood, projected with force into the glandular organs, has sufficiently washed and carried off the viscid or corrosive matters which obstruct the nervous radicles. But after an indefinite time, the excrementitial residue, deposited in the glandular cavities, occasions a new development of viscous and acrid matter, which excites a second paroxysm; such is the cause of the periodical return of the febrile accessions.

The definite cure depends on the complete elimination of the febriginous ferment; this elimination is effected by insensible transpiration, or by the sweat or urine on some other emunctory. If the fever is of a benign nature, it is equally cured, whatever may be the method of cure employed; if it is of a malignant character, every species of treatment will fail; thus, then, the surest part, in all cases, is to attempt nothing without an urgent necessity. If, however, we judge it proper to do something, it should be remembered that during the fever the principal indication consists in dissipating the obstruction of the excretory vessels, and in tempering the acrimony of the febrifacient ferment, by the introduction of a salt of an opposite nature.

If we did not know already what to think of a medical doctrine based on a theorem so hypothetical, it would be sufficient, by considering the poverty of the curative indications which were deduced from it, to declare it insufficient and erroneous. Without attempting to make apparent all the nonsense and contradictions it embraces, I shall content myself with asking: By what experiment has any one established the obstruction of the venous radicles, which was supposed to be the cause of so many diseases? How is it that Borelli, after ridiculing those who admitted the presence of a particular ferment in each secretory gland, had recourse

to the intervention of a febrifacient ferment to explain the generation of fever? etc., etc.

This theory, although as little founded in reason, as that of the iatro-chemists, presents itself under a much more attractive and scientific dress. It rests on extremely delicate considerations in anatomy and hydraulics—on calculations which it would be extremely difficult to verify, and still more, to contradict, which lends to it an air of mathematical precision, to which no other system of medicine could approach. It renewed the ingenious idea of Asclepiades of Bythinia, on the atoms, their shapes, their continued passage through the pores, and the obstacles that accidentally arrest them; but it drew these ideas from recent microscopic observations, which resembled demonstrations. In fine, it gave rise to the hope that it would be possible, some day, to represent by algebraic formulæ, all the combinations of the vital forces, and all the rules of the Healing Art.

Vain illusion, which was calculated to, and did seduce many eminent minds, among whom I will mention for Italy, Laurent Bellini, a cotemporary of Borelli, and member, like him, of the society *del Cimento;* George Baglivi, surnamed the Roman Hippocrates; Joseph Danzellini: for France, Bossier de Sauvages, the first of nosologists; J. Senac, whom Morgagni scarcely ever mentioned without giving to him the epithet *the great;* for Germany and Holland, Herman Boerhaave, the propagator of clinical teaching; John Bernouilli, who shares with Newton and Leibnitz the glory of the invention of the differential calculus; in Great Britain, Archibald Pitcairn, who proposed nothing less than the solution of this vast problem: "*A disease being given, find the remedy;* James Keill, who joined the Newtonian attraction to the mechanical principles of Borelli; John Freind, who continued the history of Daniel Leclerc; Richard Mead, celebrated by the nobility of his character, as well as by the variety of his learning.

The limits of this work do not permit me to indicate all the changes which the iatro-mechanical doctrine underwent by the pens of so many distinguished men. Besides, those details have lost very much of their interest since the doctrine has fallen into complete discredit. It will suffice to notice the principal phases through which it passed during its short and brilliant career.

George Baglivi, a native of Ragusa, being left an orphan at an early age, was adopted by one of his relatives, who was a physician, and gave him his first instructions. He received the doctor's hat at the University of Salerno, or Padua; afterward, he traveled throughout Italy to hear the most famous professors. At Bologna, he followed the anatomical course of the illustrious Malpighi. Finally, he located at

Rome, where he devoted himself to the practice of Medicine, and very soon acquired a great reputation for skill. The pope, Clement XI., immediately conferred upon him the chair of Theoretic Medicine in the college of Sapientia; afterward, that of Anatomy and Surgery, which Lancisi had just left for a more elevated station. Though young, Baglivi showed himself worthy to succeed such a predecessor, and sustained the éclat of the chair. His renown, already European, increased every day, when he was arrested in the middle of his career by a long and painful disease, by which he was lost to science on the 17th of June, 1707, in the thirty-eighth year of his age.

Baglivi endeavored to complete the theory of Borelli, by applying it to pathology and therapeutics, which the latter had barely touched. He comprehended very well that the physicians of his time, whether Galenists or Iatro-chemists, were so entirely occupied with the study of humors as to neglect very greatly the examination of the solids; consequently, he proposed to redirect his cotemporaries to the study of the latter, by demonstrating that the solids have a great preponderance over the humors in all the organic functions, whether in health or disease. "Full of this opinion," he says, "I devoted myself entirely to the observation of the symptoms during life, and to the study of the anatomical lesions after death, and I have been convinced by my own eyes, that the influence of the solids is greater than that of the liquids, even in the generation of diseases."*

He admits for the simple or primitive fiber, only two orders of affections: one proceeding from an excess of relaxation or softening, the other from an excess of tension or rigidity. This hypothesis was renewed by Themison, and is, in short, that on which all the Solidist theories rest, which pretend to go beyond the sensible phenomena. He distinguishes two orders of fibers, namely: the fleshy fiber, which has its origin in the heart, and constitutes the muscles, tendons, bones, and ligaments; second, the membraneous fiber which is derived from the meninges of the brain, and serves to form the membranes, vessels, glands, and other tissues. Consequently, he recognized also two motor principles in the animal economy, namely: the heart, which gives impulsion to fleshy parts, by sending to them a liquid without which their fibers could not be nourished or act, and the brain, whose envelopes give impulse to the movement and life of all the membranes and viscera.

The manner in which Baglivi conceived the influence of the encephalic meninges has, according to my view, no merit for originality, and is

* Specimen quatuor Librorum de Fibra Motrice et Morbosa. Animadversiones in Theoricem Veterem, sec. II.

not worth the trouble of contesting with him its invention. This physiologist, in comparing the structure and functions of the *dura mater* with the structure and functions of the heart, finds between them a perfect analogy. He further says, that as the central organ of circulation projects the blood into all parts of the body, through the arterial canals, so also the dura mater embraces closely the brain in its movements of systole and diastole, and expresses a fluid which it causes to flow to the utmost extremities of the nerves. He gives next an explanation no less odd, of sympathetic phenomena; according to him, the oscillations of the dura mater extend by continuity of tissue to the nerves, to the membranes and viscera in general, and to the heart itself: in their turn, the particular movement of each organ tending the same way, reflects itself in some sort upon the brain; hence the manifestation of a universal sympathy, a constant undulation from the encephalic center to the periphery of the body, and from the periphery to the center. A simple observation destroys this whole scaffolding: it has been avered that the *dura mater* has no sensible movement in itself; those that are seen, proceed either from the impulsion of the heart and arteries, or from the influence of respiration on the venous circulation of the brain. Moreover, the pretended continuity of tissue of the meninges with the other membranes, vessels, and viscera, is purely visionary.

If Baglivi merits our remembrance by his theoretic dissertations only, we should not, perhaps, occupy our time with this notice; but he has more solid titles to our attention. His treatise on Practical Medicine was remarkable for qualities not common at that epoch. The author gives in it unceasing counsel to be guided by observation, to sacrifice the arguments of theory to the prescriptions of experience. Here we see a man whom the prejudices of his medical education sometimes led astray, but who, by the strength of reason and the depth of his genius, was often led to return to the path of truth.

He does not show himself in this work an exclusive partisan of Solidism he was willing to acknowledge that chronic affections might proceed from a cachochymy, or vice of the humors. He was also led to think that the fevers which prevailed in Rome during the summer, originated in an alkaline excess, as they are frequently jugulated in the outset by acidulous drinks. He protested against the custom of many physicians of his time, who prescribed alkaline solutions, tinctures, and volatile salts in acute inflammatory diseases. All that class of antiacids augments, as he thought, the acridity and impetuosity of the blood, the dryness of the tongue, thirst, insomnia, headaches, general heat, and, in a word, exasperated all the symptomatic features of inflammation.

He pronounced a very wise judgment on the manner in which we should appreciate the ancients and moderns. "I have seen," he says, "in some academies, men so prejudiced against the ancients, that they feared it would degrade their intelligence to devote a little time and trouble to read the works of the Galenist writers. They preferred to torment their minds miserably, in order to imagine something new and unheard of; and if by accident they encountered something of the kind, they think they have great claims upon science—enough for their glory. Others, on the contrary, were so religiously attached to the opinions of antiquity, that they unceasingly criticised modern discoveries, however fine or useful they may be."*

Again he says: "Medicine is not a production bursting suddenly from the genius of man, but is the child of time. In old times it was believed to be an inspiration from the gods, but it can be said with more truth, that it is the fruit of observations collected from age to age, for a great number of centuries. Those who pretend that experience and reason are opposed to each other, seem to me to be rambling rationalists and Empirics." This last sentence is a trait of genius, a ray of light which the author himself very soon abandons, but which we must keep in view; no, reason and experience are not two opposing authorities which condemn each other, and all medical doctrines which do not satisfy, at the same time, both of these modes of acquisition, are manifestly defective.

Baglivi, despairing of being able to resolve such a problem, that is to say, to put practice and theory in agreement, essayed to draw between them a line of demarkation, by assigning to each its department—an enterprise inconsistent on the part of a man who had declared that reason and experience, or in other words, theory and practice, should always go together. "It is proper," he says, "for the theorist to give reasons for the apparent phenomena of diseases—to compare past circumstances with the present—to scrutinize the hidden causes of morbid accidents, and the true origin of the causes themselves—to develop, in fine, all that relates to the subject, so that the physician may appreciate clearly, and with precision, the curative indications; but it belongs to the practitioner to arrange the history of diseases—to pronounce on the appropriateness of remedies, and the indications to fulfil, and to judge by the light of experience all that relates to the cure of diseases. Whoever shall act differently, and pretend to submit the rules of practice to the principles of theory, will obtain no success in the treatment of diseases."

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* Opera Omnia Medica. Pref.

No one could contradict himself more openly than Baglivi has done, in the passages we have just quoted; but this must not astonish us—on the contrary, we must expect to see these contradictions frequently renewed, for as soon as an eminent logician leaves the true route, he has more difficulty than any other to re-enter it—the chain of his ideas leads him always straight forward in the track on which he has entered. Here is another remarkable example of the contradictions of this author, in the portrait he has drawn of the Empiric sect: "This sect," he says, in one place, "banishes from medicine all theories, and even every species of reasoning, and follows experience only, in the cure of diseases; not an experience guided by reason, and multiplied proofs, but a stupid experience, guided by accident, and worthy of market houses only. This sect introduced so many absurdities into medicine, that the Art would have been destroyed if Galen, about the first century of the Christian era, had not raised a dyke to oppose that torrent of errors, and founded, with as much courage as prudence, the Rational sect, on an immovable basis."

Farther on, this same author holds a very different language: "The Rational sect," he says, "persecuted with hatred the Empirics, describing them as vile, and unworthy of cultivated minds, and fit only for the populace in market places. I should approve of their conduct if by Empiricism they meant the method of stupid and blind experimentation, not subjected to repeated tests—not matured by reflection, in short, serving only as a basis of false inductions and monstrous precepts. But I can not agree with them, if they had in view a rational or learned Empiricism, the fruit of method, not of hazard, directed and fructified by intelligence, and aspiring to the highest truths by the attentive and persevering observation of sensible phenomena. Such an Empiricism has obtained in all time the approbation of enlightened men, who strove to increase it, as a mode of acquisition conformable to our nature."

In many other passages still, the Roman Hippocrates emits an opinion favorable to Empiricism, only one more of which I will give: "According to Pliny, we are ignorant of what makes us live; but, if I dare give my opinion, we are much more ignorant of what makes us sick; for the infinitessimal substance that gives the first and immediate impulse to disease, is entirely incomprehensible. How, then, in the midst of so much obscurity, can we deduce the therapeutical indications? I avow, that in so much embarrassment, the testimony of the senses is our only refuge; in other terms, it is necessary to have observed long and patiently, by what process nature engenders disease—how she effects the coction and separation of the peccant humor—then establish, on this base, a curative method, which, following nature step by step,

never loses sight of the injurious or useful effects of the remedies. Now, it is important in this task that reason, so much vaunted by physicians, submit itself to Empiricism—to that Empiricism which letters have polished, which several series of observations have confirmed, and which intelligence vivifies by its light; for the aid which theory alone promises us, swells at first our hopes, und then leaves us in perplexity."

*Hermann Boerhaave* was endowed with a comprehensive and subtile mind. Profoundly versed in the writings of the ancients, and no less familiar with all the works of moderns, he undertook to unite in one body, the doctrines of all the branches of medical science, and to conciliate among them the reigning theories of his times. He was eclectic, after the manner of Galen and Fernel; but as the mechanical explanations predominate in his writings, he has been classed among the Iatromechanics, the same as Galen and Fernel are classed among the Dogmatists. After the example of these he divided his entire course on Medicine, or his Institutes, into five parts, which are, physiology, pathology, semeiotics, hygiene, and therapeutics. The first part forms, alone, two-thirds of the work; so that the four following occupy, each, but a small space, and embrace only a general view of the matters of which they treat.

Physiology being then the most complete part of this course on medicine, we proceed to take a rapid view of it. He represents the action of the stomach or food as follows: "If you consider that the food is continually diluted by a great quantity of saliva which flows, unceasingly, from the mouth and the esophagus, into the stomach, and by the humor which transudes the coats of the stomach itself; that these are mingled and agitated with the rest of the food, which has been previously taken—that their most intimate parts are moved by the action of the air, which is ground up, if I may say so, with it, and that all this is augmented by the heat of the organ: you can conceive that the effect of the concave part of the velvet tunic, is to dilute, macerate, swell, attenuate, and produce the commencement of fermentation, putrefaction, rancidity, and the solution of food, and fit them for a change into a nature similar to that of the humors of our body. You do not yet comprehend by this how the stomach can digest the solid food which has been but slightly masticated. But to find the cause which we seek, cast your eyes on the muscular structure of the stomach and see what action depends on it. ⁂ ⁂ ⁂ In several animals the digestion is almost wholly accomplished by the sole contractile movement of the stomach—a movement which is so considerable that it is heard and felt."

We see here a very skillful amalgam of ideas drawn from anatomy,

physics, and chemistry. The rest of the doctrine of Boerhaave offers throughout the same assemblage of ideas, and for that reason I shall not multiply the quotations. I will add only the following, to show how much the greatest minds are liable to be deluded in regard to theories, and to take for demonstrated truths the simplest conjectures. "The fluid which has been filtered," he says, "through the corticle substance of the brain and cerebellum is pressed continually by the action of the heart and arteries into the nerves, and by means of the nervous canals into all parts of the body, forming a circulation as real and as constant as that of the blood and the lymph. This humor is so simple, so mobile, and so perfectly volatile, that it has been called the nervous spirit, and is sub-divided into natural, vital, and animal. But as the secretion of these spirits is never interrupted, as it is constantly supplied anew, in order to repair what is lost or consumed, it appears that those which have fulfilled, entirely, their purposes, pass from the last filaments of the nerves into the small lymphatic veins, by which they are carried into other veins a little larger, then into the common lymphatic vessels, whence they flow to the heart by the sanguiferous veins, and thus this subtile fluid circulates, incessantly, in its vessels, like the other humors."*

In his writings on practical Medicine, Baglivi abandons theories, or pays but little attention to them, and advises to rely entirely upon experience. Boerhaave, on the contrary, does not appear to doubt for a single instant the exactness of his theoretic speculations, and endeavors to base upon them all the phenomena of diseases, and all the rules of Art. Herein he shows himself a more refined dialectitian, but a poorer observer than the Roman Hippocrates. The latter appears to me to have more depth and genius; he rises, often, above the prejudices of his medical education and of his age; he sheds frequently brilliant light in the midst of his contradictions. The other had a larger mind and more extended erudition; he adopts the teachings of his masters as infallible dogmas, and appears to have no other ambition than to co-ordinate and conciliate, and to unite them into a complete system. He says in one of his first aphorisms, that the study of pathology must be commenced in the most simple affections, those of which we have the clearest idea, which are the easiest to heal, and the knowledge of which is indispensable for the understanding of other diseases. Now, according to him, the diseases of the primitive fiber are those which fullfil these conditions in the highest degree, as may be seen in the following passage:

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* Instit. Med.

"The primitive fiber," he says, "is composed of small simple terrestrial particles, separated from the fluid contained in the vessels. They are reciprocally applied to each other by the forces of life, in such a way that the perturbating causes which exist in the living body are scarcely able to change or alter their nature. On this account, each molecule in particular is not subject to any disease that physicians have seen or treated; but the smallest fiber which results from the reunion of these molecules is subject to the following diseases: excess of softening or relaxation, excess of tension or elasticity."*

Thus the professor of Leyden favors us with the affections of the microscopic molecules of which the primitive fiber is composed, while no physician up to this moment has seen or treated any affection of this order. In regard to diseases of the fiber itself, he shows them to us in their smallest details, so well that we could scarcely doubt that he had seen them and followed them in all their phases. Now, as no one before or since has pointed out this class of diseases, it must be thought that Boerhaave has seen the marvellous things which he recounts above, with a particular microscope, or rather with the eyes of faith.

Let us then turn away from these microscopic diseases, on which it is impossible to establish any reasoning, and come to diseases more cognizable—inflammation, for example. If we define inflammation, with the surgeons, an affection characterized by heat, pain, and redness, accompanied often with tumefaction, and followed nearly always by an abnormal secretion, there is no one who may not in a moment form a clear idea of this disease; and who, in seeing scurvy, or erysipelas, or phlegmon, or erythema, or a simple labial herpes, could not say, from the preceding definitions, that they are inflammations. It would not require, afterward, a great effort of the imagination to suppose that this *ensemble* of phenomena, to which we give the name of inflammation, phlogosis, or phlegmasia, may take place internally as well as externally. This conjecture becomes a probability, if in certain diseases of internal organs, such as the stomach or intestines, the patient realizes a sensation of heat and pain, similar to that felt in external phlegmasia. The probability augments still more, if the natural secretion of the suffering organs is altered, augmented, or diminished, etc., etc. In this way, it seems to me, we may proceed from the known to the unknown, from perfectly apparent phenomena to those which are only partially so, or which manifest themselves only by their connection with other sensible phenomena.

Boerhaave did not proceed in this way, as is plain from the extracts

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* Aphorisms.

we have already given from his writings, and also by those which we now proceed to add. Phlogosis, he says, consists in the stagnation of the arterial blood in the smaller vessels, is agitated and pressed by the rest of the blood, whose force and quickness are increased by the fever. It may be developed in the extremities of the sanguineous arteries, or in the sero-lymphatic vessels, or in other arterioles more attenuated still; which, not being able to transmit the red globules or other grosser parts of the fluids which have penetrated into their cavities by the dilatation of their orifices. * * * * The capillary vessels, which are barely visible, augment in volume and are distended with blood, and form a red tumor. Their parieties, formed of small fibrillæ, are on the point of rupture, which causes the severe pain. The solids and liquids acting and reacting on each other, produce the hardness and resistance. Finally, the liquid globules flowing through the now obstructed vessels, break against the tumor, and it is this mutual attrition of the liquids and solids that causes the heat and the itching. Who can comprehend these transcendental explanations? For myself, I avow that I understand nothing that is said there, or rather, I see that friction, on which every one may think and write what he pleases.

If from phlogosis, considered in general, that is, from an abstraction made from the tissue in which it is developed, we pass to the examination of phlogosis in particular, that of the lungs, for example, we shall always find the same defects in the descriptions of this author. He carries us constantly from observation into the field of hypothesis. "When the vessels of the lung are attacked with inflammation, it is called peripneumonia. Those of the vessels which may be invaded by the phlogosis are the bronchial and pulmonary arteries, and their lymphatic collaterals. Thus, we may conceive of two species of peripneumonia; one of which is located in the pulmonary arteries, the other in the extremities of the bronchial arteries."

Doubtless we may, in our minds, distinguish these two species of peripneumonia, and others also; but where is the observer who has ever discerned them on the living, or even the dead; and, therefore, I ask, of what practical value is a purely ideal division, which none of our senses can apprehend? Let us recall our fourth philosophic axiom, which, among other things, says that, if it is important to make distinctions, it is, perhaps, still more important not to make too many; and that we must not multiply divisions any further than is necessary to regulate us in the use of the things relative to our wants. Now it is clear that the distinction of these two pneumonias, admitted by Boerhaave, is not only useless, but also inappreciable in practice.

After the death of the celebrated professor of Leyden, the iatro-

mechanical doctrine rapidly fell. At this time it exists only in history, and in some parts of physiology. Others succeeded it, to disappear, also, soon after, or submit to considerable modifications, so rapid was the movement of ideas during the historic period which we have just reviewed.

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### ART. V. ANIMISM AND VITALISM.

While the teaching of the professor of Leyden shed such a glaring light over the medical world, and disseminated widely his mechanico-chemical doctrine, two other professors, less celebrated than he, and less profound, but more attentive and faithful observers of nature, laid the foundation of new theories, destined to take the place of his brilliant system. One was Frederic Hoffman—the other George Ernest Stahl. Both had been fellow students in the University of Jena, and now found themselves colleagues in the rising school of Halle, on which they drew, for half a century, the attention of the learned world.

Stahl, of whom we shall speak in the first place, belongs not less to the history of chemistry than to that of Medicine, by his discoveries and his writings; but in this work we can only occupy ourselves with his medical opinions. He was physician to the court of Weimar in 1694, when he was called to the University of Halle, on the recommendation of his old fellow student, Hoffman, who showed by this circumstance, all the generosity of his soul; for he was not ignorant that he made himself a rival, whose doctrine differed much from his own, and whose renown might cast him in the shade.

The new professor responded fully to the opinion that had been formed of him, by acquitting himself with a zeal and exactitude that never belie the arduous functions of a professorship. More inclined to observe and to meditate than to read, he showed a somewhat affected disdain for classic erudition, though he attempted to cover his defect of literary culture by some quotations from ancient authors, and by the insertion of a quantity of Greek words in his Latin periods. He may be excused for having often presented the ideas of others as his own, by alledging his slight erudition; but nothing can justify the epithets of contempt which he lavishes on his scientific adversaries. His principal title to glory in Medicine, is for having recalled the attention of his cotemporaries to the natural tendencies of the animal economy—to the reaction of the vital forces—or the soul—in diseases—a reaction and tendencies which the physico-chemical doctrines too much lost sight of.

In the first place, he says, it should be understood what life is—in

what it consists, essentially—what is its principal seat—what end it subserves, and its final destination. Afterward, it should be well understood what constitutes health, and the signs by which it may be recognized, in order to know under what circumstances the practice of the Art is useful or necessary.* Now life, according to Stahl, is nothing else than the conservation of the humors of the body in a state of integrity and perfect mixture, notwithstanding their very marked tendency to putrifaction—a tendency which is rapidly developed as soon as they are withdrawn from the influence of the vital force. It is in this respect that the living body is distinguished from inanimate bodies, or simple compounds. "We must never," he exclaims, a little farther on, "loose sight of that disposition according to which the mixtures of the liquids precede the structure of the parts; so that there is not, in the animal economy, any organ or tissue, which does not presuppose the fluid molecules, the reunion of which has served to form them."

We have seen the Iatro-chemists present fermentation as the essential and primitive phenomenon of life,—the Iatro-mechanics attribute that prerogative to muscular contraction; but now we see another physiologist who regards the preservation of the humors in a state of integrity and perfect mixture as the primordial and characteristic act of a living being. Others will come still, who, proceeding from a new point of view, will accord prëeminence to other phenomena. They all forget that sentence of Hippocrates, confirmed by G. Baglivi: "The human body has no determined commencement. Each of its integral parts may be regarded equally, as the first or the last; for in a described circle, it is impossible to find either beginning or end."† Neither do they remember better that sentence which forms our sixth philosophic aphorism. "What is called *essential* or *non essential* is related strictly to our ideas and our wants. All the qualities of each individual, considered in itself, are equally essential, in the sense that they all proceed from its essence and its nature, and it is not therefore exact to say that certain of its attributes are more essential than others."‡

After having defined in his way the essence of life, by saying that it consists in the preservation of the mixtures of the humors, the professor of Halle asks what is the primitive agent or principle of this fundamental act? and endeavors to prove that it cannot be anything else than the immaterial and rational soul. He forms from this view two arguments: the first is drawn from the final destination of the human body, which has only been created, according to him, as an instrument

* Doctrinæ Medicæ Theoricæ part I., Physiologiæ de Vita et Sanitate.

† Hippocrates on Regions in Man.—Baglivi de Fibra Motrice.

‡ Locke's Essay on the Human Understanding, Book III, ch. IV.

for the soul. "It must be remembered," he says, "the human mind could do nothing in this world without the intermediation of the body, for which it is intended. Its functions consist in the acquisition of knowledge, and the exercise of voluntary acts. It cannot put itself in relation with sensible things, nor have, consequently, any idea but by the aid of material organs. It cannot, either, manifest and execute its purposes except by the same organs. It is also very evident, that the body is subjected to the soul, since it employs it both in acquiring knowledge and accomplishing its purposes."

The second argument that Stahl proposes is still more subtile. "The act," he says, "by means of which life is sustained, and the soul fulfils its functions, is absolutely repugnant to matter, and agrees well with the nature of the mind. That act, as observation shows, is motion: by it the mixture of the humors is preserved in integrity; the soul acts on the body and in the body; compares, reasons, and moves from one object to another; in a word, it is in perpetual motion. Now, all motion is an immaterial act, which can only have for a principle an immaterial substance itself." On this our physiologist rested without knowing it, or at least without saying so, on an axiom of Descartes, who accords to matter no other essential property than extension, and who requires for the production of any motion, the direct or indirect impulsion of a spiritual agent.

Stahl, in supposing, with Descartes, that all motion requires the aid of a spiritual motive agency, affirms a thing which our common observation contradicts, every moment. In fact, we see constantly produced around us and in us, movements which no one is tempted to attribute to a spiritual agency. Besides, it is well demonstrated that our information, in regard to physical things, cannot go beyond our sensations, and our sensations can learn nothing concerning the presence or absence of a spiritual being.

Thus considered, the opinion of Stahl on the first motor influences of the animal economy, has only the value of an hypothesis; but compared with the opinions emitted in advance of him, on the same subject, this hypothesis has the advantage of being more simple and less unreasonaable. It may be therefore said, literally, that the physiologist of Hallé triumphs, when he puts his hypotheses in comparison with those of his predecessors.

"Those who first assigned to the human heart other active principles besides the rational soul, imagined two more souls, each endowed with a certain degree of discernment, by means of which they were supposed to execute their functions with order, measure and propriety. They named the one vegetative, and the other sensitive."

"Those who hold to the opinion, more ancient still, which allows in man only a single intelligent and rational soul, of a nature superior to that of brute, charged with inferior as well as with the most exalted functions, from the plausible reason that what accomplished the highest, can perform the lowest things, disfigure that doctrine, otherwise very sensible, by the addition of numerous energies or abstract faculties, which they transform by a figurative language into so many real entities, which execute certain special functions under the direction of the soul. Such is the origin of digestive attraction, plastic assimilation, and other faculties which play so important a part in Galenic physiology."

"It was much worse, when, deluded by that absurd axiom, that there can exist no connection between an immaterial substance and matter, the physicians invented a host of spirits, a species of beings extremely subtile, serving as intermediaries between the soul and the body. Although so gross a fiction that children now could not be imposed upon by it, it received so much favor, that the spirits were regarded as the servants or emissaries of the soul; their rapidity was compared to light, and realizing more and more this fiction, they ended by saying, that a spirit was a luminous substance. Van Helmont replaced these spirits by the archeus, or archei; but while the soul was denied to have effective power, they accorded to the spirits, or archei, the knowledge of the functions which devolved upon them, and the power to fulfil them."

After having proved that neither chemical ferments, nor the shape of liquid molecules, nor the configuration of vascular orifices, are sufficient to explain the secretions and excretions, he adds, "We must say as much of this invention of some moderns, who assume that particles destined to be secreted exert a special irritation on the secretory organs, in such a way that each of these, by contracting itself, expresses and rejects the humor which is appropriate to it. But, besides the oddity of this fiction, which represents to us mechanical instruments, susceptible of irritation, experience contradicts such an hypothesis. Thus, the urine, after much drinking, is passed more frequently, freely and abundantly, and at the same time is less dense and more watery; when, on the other hand, it is more charged with salts, or in other words, more irritant, it is passed less frequently, and in a smaller quantity, which is contrary to the supposition above stated."

Others have better developed, than Stahl, the influence of the physical upon the moral man, but no one has made so sensible the influence of the moral upon the physical man. He gives some very curious examples concerning the effects of the passions and habits on the vital acts. He explains, very naturally, the birth-marks on children (*nævi materni*), by the sympathy which exists between the soul, or the

imagination, of the mother, and the soul of the fetus. In fine, he concludes, from all these physiological considerations, whether general or particular, that it is the soul which presides directly, and without any intermediary agency, over the organization of the body, from the moment of the fecundation of the germ, and it continues to direct all its functions until death.

Let us hasten to repeat a sentence which we have already proclaimed, that all these transcendental speculations of ancient and modern physiologists, on the final destination of the human body, or on its first movement, or on the primordial phenomena that commence the circle of animal life—all these speculations, I say, appertain rather to philosophy than to medicine—they have not advanced a single line the Healing Art. I repeat, there is not a single one of the hypotheses emitted on such subjects, which are not connected with absurd or injurious practical consequences, which is the cause of the legitimate repugnance which practitioners feel for all the physiological systems that rest upon assumptions, without the pale of observation, and leads them to refuse to discuss them, otherwise than by the practical conclusions that flow from them; imitating in this way the mode of reasoning of the mathematicians, who, when the data of a problem conduct them necessarily to an absurd conclusion, conclude from this that they are insufficient, or badly laid down.

Let us see, then, what are the practical consequences of Animism. The author of the system, himself, deduces them from it, in these terms: "if the movements of the animal economy depart, in any respect, from the normal mode, then the physician should understand that it is his duty to calm them, or to excite them, or to restrain them, in a word, to act upon them conformably to the natural indications. It is of the highest importance to him, to have constantly in view the natural synergy of the soul, in order to show himself the minister, rather than the governor: in other words, the physician should study to follow the movements and tendencies of nature, rather than to believe himself authorised to dare attempt something, without having due regard to her tendencies."

Such a maxim made a fundamental rule of therapeutics, and, rigorously observed, is nothing else than the absolute negation of the active concurrence of the physician in the treatment of diseases; it is to limit the functions of the man of the Art to a lazy contemplation of the sufferings of the patient. If it was true as Stahl taught, that every pathological affection was the result of the reaction of the soul against the morbific agent: if the totality of the symptoms of a disease only represent the succession of vital movements, designedly put in action

by a rational agent, for the purpose of effecting a cure, could he do better in any case than remain a spectator of the struggle in which he could take no part, without running the reasonable risk of deranging the wise combinations of the supreme regulator of the economy ?

Let no one accuse me of exaggerating the consequences of the therapeutical axiom of Stahlism. Many philosophers and physicians before me have deduced them in equivalent terms ; they have likewise advised that nothing be done in most diseases ; to await patiently till nature surmounts the difficulty, which advice is easier to give than to follow, and which few physicians put in practice, even of those who proclaim its excellency. The only active succor that the physicians and the assistants may attempt, according to this doctrine, consists in giving to the patient what he may desire, and furnishing him the means, as much as possible, of satisfying his instinctive appetites, which are supposed to indicate the tendencies of the organism, or to be the appeal of nature. Those who reason thus forget that art was invented only on account of defects and frequent errors of instinct, and to bring aid to this insufficiency. This is a fact that has been established by all medical historians, and that I have sufficiently amply discussed in the first volume to make it evermore an element of the science.* Nevertheless, there are many diseases that are cured by the natural forces only. Then the functions of the physician are limited, effectively, to the prevention of imprudences, so that nothing be done rashly. Now the Iatro-chymici had too greatly lost sight of this truth, which Stahlism reminded them of by exaggerating it.

The doctrine of pure Animism spread rapidly, particularly in Germany, but beyond that region it made very little progress ; the theory of the vital principal which is very analagous to it was generally preferred, especially in France, but it differed from it in several important respects ; for the vital principle of the moderns resembles much more the sensitive soul of the ancients or the archeus of Van Helmont, than the immaterial soul of the Stahlians. Barthez, the founder, or at least the eloquent defender of the doctrine of the vital principle, carries it back to the plilosophy of Plato, and even to the dogmas of Pythagoras. He recognises it in the writings of Francis Bacon, and more distinctly still, in those of Van Helmont. The latter, according to him, is among all moderns the one who has indicated the greatest number of phenomena which announce in man a vital principle, distinct from the body and the mind, and yet endowned with sensation and perception.†

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* See the Primitive Period in this History.

† Nouveaux Elements de la Science de l'Homme. Second Ed. Paris, 1806.

Now if we demand of Barthez what is the nature of that vital principle, he responds: it is neither an extremely subtile matter, intermediate between the soul and the body, nor a pure spirit, nor a simple modality of organized matter. "Frederic Hoffman," he says, "and other celebrated authors, have pretended that the principle of life which animates a man is of a medium nature between the soul and the body; but this middle being is one of reason, for we cannot pass by gradations from the body to the immaterial soul, and the essential nature of these two substances causes them, necessarily, to exclude each other. The principle of life whose functions are exercised in the human body, must be conceived by means of ideas entirely distinct from those by which we apprehend the nature of the body and the thinking soul."

It appears, nevertheless, very difficult to admit the existence of an active principle, which may be neither a spirit, nor a body, nor a subtile fluid intermediate between the soul and the body, nor a simple attribute, or property of matter. The vital principle of Barthez, if we may believe him, is none of these things, but is somewhat related to each; it is an inconceivable amphibological being, something less than an hypothesis, for it is a doubt. Hear, now, the celebrated professor of Montpellier develop this singular doctrine. "We can only give," he says, "negative assertions, doubts, and conjectures, on the nature of the vital principle of man. It is useful to develop the skepticism of these considerations, in order to study more surely the forces and affections of this principle." A little farther on he adds, "I observe, especially, that it is useless to discuss, as may be done in following ordinary ideas, whether the vital principle in man is, or is not, a substance; because it seems to me impossible to give a clear sense to the word substance, though this term is commonly employed in metaphysics. The question which I should ask myself in this section is, then, solely, whether the principle of life in man has its proper and individual existence, or whether it is only a mode inherent to the human body, to which it gives life?"

"It may be possible, doubtless, that, according to a general law, established by the author of nature, a vital faculty, endowed with motior and sensitive forces, supervises, necessarily, (in an indefinable manner) the construction of matter, of which each animal body is formed, and which, in consideration of this faculty originates subsequent movements, necessary to animal life, in all its duration. But it may be, also, that God unites to the combination of matter which is given to each animal, a vital principle, which subsists by itself, and which differs, in man, from his mind."

I say it with regret, more absurdities could not be crammed into so

small a space. What! you announce that you will not discuss whether the vital principle in man is a substance, or not, but that you are willing to inquire whether it has a proper and individual existence, or if it is only a mode of existence inherent to the human body! Ah! do you not see, that it is the same question, in different terms? And then, how strangely you resolve the question! You say that this vital principle might be only a modality of the organic body; or that it might also have its proper existence. Here is a solution that resolves absolutely nothing. Nevertheless, Barthez soon quits his character, as skeptic, to entertain us, throughout two volumes, with the faculties, acts, and lesions, of the vital principle. He speaks of it no longer as of an equivocal and hypothetical being, but as of a real and very active being, endowed with proper forces, and susceptible of modifications distinct from those of the soul and the body.

He attempts in vain, in the conclusion, to return a little to the skepticism he announced in the onset; his *penchant* for the realization of the vital principle is observed in his dubitable phrases. "The results on the death of men are as follows: first, the dissolution of the body; second, the extinction of the forces of the vital principle; lastly, the separation of the soul. ⁂ As is sensible, on the one hand, the metamorphosis of the terrestial part of man, so is doubtful, on the other hand, the fate of the vital principle after death. If this principle is only a faculty united to the living body, it is certain that at the destruction of the body, it returns into the system of forces of universal nature. If it is a being distinct from the body and the soul, it may perish with the extinction of its forces in the body which it animates; but it may also pass into other human bodies, and vivify them by a sort of metamorphosis. ⁂ When a man dies, his body is resolved into its elements; his principle of life reunites with that of the universe, and his soul returns to God who gave it, and who secures it an immortal existence."

If, setting aside the radical fault with which the system of Barthez is stamped from its origin, we follow the development of the system into the particular applications which the author has made of it, we shall easily convince ourselves that no other has furnished, to this day, as reasonable explanations on most of the phenomena of the animal economy, whether in a state of health or disease. No one, for example, has explained as naturally the physiological or pathological sympathies which are manifested in a multitude of individuals; sympathies which are often very strange, very surprising, and always a useful study for the physician.

But it is especially in therapeutics, that touchstone of medical

doctrines, where Barthez shows himself superior to all the theorists of antiquity and modern times. Before him, only the two following axioms were known in medical practice: "Diseases are cured by their contraries;" "The physician is the minister of nature, and should study, only, to follow her indications and tendencies."

In virtue of the first of these axioms, the Iatro-chemists employed acidulated drinks to correct the alkaline acretions of our humors, and they gave alkaline or spirituous drinks to correct the acid accretions. The Iatro-mechanics made use of incisives and operatives to unload the vessels or their obstructed pores. In accordance with the second axiom, the Hippocratists and Animists observed the crisis, and extolled the expectant method. For these two axioms, one of which is false, as we have heretofore demonstrated, and the other of which is susceptible of a multitude of diverse interpretations, the physiologist of Montpellier substituted a more precise and philosophic language.

M. Lordat, the depository and skillful interpreter of the therapeutical doctrine of Barthez, expresses himself as follows on this subject; "We may include in three classes all of known therapeutical methods: the first comprises the natural method, the second the analytical, and the third the empirical."

"I. The natural methods are those which aim to favor, to accelerate, or to regulate the course of diseases which tend toward a favorable solution. The name indicates the end proposed, viz: to aid nature, and render her operations surer, either by retarding, hastening, or changing the proportion of the elementary acts which she employs.

"II. The analytical methods are those in which, after having decomposed a disease into the essential affections of which it is the product, or into the simple diseases which compose it, the physician attacks directly these elements of disease by means proportioned to their relations of force and influence.

"These methods, as well as those which will be discussed in the following article, are employed: First, when nature makes no salutary effort; secondly, when she acts feebly and tardily, so that her efforts are exhausting; and lastly, when the natural movements add still more to the gravity of the disease.

"Thus, to give an example of the decomposition of a disease, in most catarrhs, particularly in those which return periodically, Barthez finds: first, a superabundance of serous humors; second, a fluxionary movement which directs them especially toward the mucous membranes of the nose or the lungs; third, a modification of the vital actions of those membranes, which puts them in harmony with the other elementary acts, and leads them to concur to the same end, namely: to the

excretion of redundant humors, but which may degenerate into excessive irritation or into atony.

"By the analytical method, all the symptoms are not attacked at once, and when it is used, equally energetic means must not be employed against them all. The great art is to choose those elements which it is the most important to combat, and to determine the order in which they are to be attacked.

"III. We now come to the empirical methods. To conceive their spirit, we have only to oppose them to those of which we have first spoken thus far. In the natural and analytical methods, we perceive the mode of utility of the means employed, *i. e.*, the relation of the indications to fulfill, with the affections and the immediate results brought about by these means. We see, for example, that an artificial flux, occasioned by a venesection, or by other attractives, resolves an inflammation completely, by destroying the natural flux, which enters into the constitution of that disease. ⁂ The empirical methods are those whose efficacy has been established by experience, but whose immediate and primitive effects have, in regard to the cure of the disease, no connection that our minds can appreciate. Barthez recognises three sorts of empirical methods, which he distinguishes as imitative, perturbative, and specific."⁂

The following method of considering the operation of therapeutics is as new as it is luminous and fruitful. We may say that it lays the true basis of the philosophy of this science, and includes the germ of a revolution in its ideas and its language. The new methods of treatment which Barthez has described are of too high importance to be admitted by us before having proved them in the crucible of severe criticism. We now proceed, therefore, to examine them in succession, with the most serious attention.

### NATURAL METHOD.

This method aims, says one, to favor, accelerate, or regulate the progress of diseases which have a favorable tendency. When the physician observes that a disease has a favorable tendency, he can do nothing better than to watch its progress, in order to obviate the untoward changes that may ensue, and to prevent the imprudences that the patient or his friends are liable to commit. The epithet *natural*, given to this method exclusively, seems to me inexact, for it conveys the idea, that we follow better in it the indications of nature than in the others, which the author, doubtless, does not mean to say, for it would be erroneous.

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⁂ M. Lordat, Exposition de la Doctrine Medicale de Barthez. Paris, 1818.

There exists, in fact, no method of treatment which does not rest, or pretend to, at least, on the natural indications of disease—on the knowledge of their symptoms, course and tendencies. The particular method which is now in question, would be much better designated by the epithet *expectant*, which many writers give to it. This last expression characterises much better the position the physician assumes in this method, and creates no unfavorable prejudices against the other curative methods which he believes it proper to employ, where different indications require it. The expectant method is convenient, first, when the affections tend, spontaneously, to a happy termination; second, in new affections, not well understood. It has been recommended, particularly by the Hippocratists and Animists.

### ANALYTIC METHOD.

This method is perfectly defined and developed by M. Lordat. "It consists," says this writer, "in decomposing a disease into the elementary affections, of which it is the product—or into the more simple diseases of which it is composed, in order to attack separately each of these elements, by means proportionate to their relations of force and influence. We have recourse to such a method in diseases which have no tendencies in themselves to a happy termination, and which we cannot cure by any direct specific medication."

I will add to these statements, that the analytic method is the most difficult in application, because it requires more investigation than all the rest; namely, the decomposition of a disease under treatment. But, as by this decomposition our minds seem to get a more intimate knowledge of the circumstances of the disease, and to penetrate farther into the secret operations of nature, it has happened that several writers have called the analytic method, exclusively, the *rational*—a very improper designation, because it conveys the idea that reasoning is excluded from the other curative methods, or that there is less reasoning in them than in this. These writers measure the exactness of our judgments by the labor which they have cost us; they resemble a mathematician, who supposes that one reasons more justly in transcendental geometry than in arithmetic.

The third method which this author describes, is designated by the term *empirical*—but it must be granted that all that is said on this subject is inexact—even its name. In fact, the word empiric, joined to the substantive, method, signifies a manner of treating diseases in conformity with experience. Now, I ask, is there any method of treatment which must not be established both on experience and on reason? Let us recall that sentence of Baglivi, which we have heretofore quoted:

"*Those who suppose that reason and experience are opposed to each other, are deceived;*" and we must conclude from this that nothing is less sensible than to attempt to distinguish one curative method from others, either by the term rational or empirical. M. Lordat himself has felt the impropriety of this denomination, for he adds, a little further on: "Rigorously, all the modes of treatment, considered in their immediate effects on the elementary affections, are empirical, because the results of their action could never have been anticipated." But instead of rejecting an improper expression, which leads to a confusion of ideas, he endeavors to justify it by a sophism.

How has it happened that Barthez, having discovered a curative method founded upon analysis, or the decomposition of a disease into elementary affections, did not conceive of another, founded on synthesis, that is, on the consideration of the totality of the morbid phenomena? It was, too, a natural consequence, to which it would seem that the most simple reflexion would conduct him: but genius sometimes sleeps, *aliquando bonus dormitat Homerus.* It suffices by giving a little attention to what passes in our minds, when we have to treat certain diseases, to be convinced that after having examined, separately, each symptom, we re-unite them all together, to form the idea of a single disease. For example, let an individual present himself, who has small ulcers on the prepuce, with a dirty greenish base; also having a small tumor in the groin, of an oblong form, without any red color, but hard, and slightly painful: let such an individual recall that he has had, fifteen days before, connection with a suspected woman. From all these circumstances united, aud there might be many more, I should form, in my mind, an idea of a single affection, termed syphilis; and I would direct against it a treatment which would attack all the symptoms together, and which, on that account, I should call *anti-syphilitic.* I am ignorant how a small quantity of a salt of mercury removes all the accidents of syphilis, as by enchantment, in a multitude of cases: but what does this import? The essential for me and the patient is, that I know that this result will take place, and under what conditions it will be produced. I know no more in regard to any other therapeutical phenomenon, though many authors have given us, for three thousand years past, very wise explanations on most of these phenomena. It is true that nearly all their explanations have the inconvenience of differing from each other, and of contradicting themselves even. On this account it is prudent to suspend a judgment, until the parties are put in agreement, and hold on to the crude fact, without interpretations. To the physicians who seek the explanation of therapeutical facts, and to those who pretend to have found them, for a certain number of cases, I will content

myself by citing the following words of Barthez: "Hume has justly said: it does not appear that any corporeal operation, nor any action of the soul on its proper faculties or on its ideas, can make us conceive the production of causes, or the necessary relation which they sustain to their effects. In the succession of natural phenomena, nothing presents to us the idea of causality, or the necessary connection between cause and effect; but when the succession of one phenomenon after another is constant, the human mind which observes it assiduously, and which can frequently even foresee it, is led to believe that these phenomena succeed each other because they are bound together."*

Thus, then, without seeking to understand why mercury removes venereal accidents, or why vaccine prevents the variolic infection, why bark cures the intermittent fever, etc., I shall employ these agents in cases where they are indicated, with as much certainty and reason as I would employ blood-letting against an inflammation. I call the method of treatment used in such cases, the *synthetic method.* I shall not say, with a crowd of theorists, that such a method is not rational, but will say, on the contrary, that it is very rational, or rather that it is, as the preceding, both rational and empirical. In the first place I maintain it is rational, for the best reason that one can give for the use of a remedy is the certainty of its success; now, every one will consent, that Medicine possesses no remedies whose efficacy is more constant than those which I have enumerated above. In the second place, the method is empirical, because it is founded on experience. No one can contest this quality.

But what is most singular is, that in giving to this method the epithet, empirical, there is a design to tarnish it, and exclude it from the class of means acknowledged by science. Is it possible that the theorists pretend to banish from the domains of art, the most precious, the most efficacious, in a word, that which is the true glory of the Art? When a doctrine leads to such a conclusion, it is done for; in the eyes of practitioners, and of all men of good sense, it is judged and condemned.

Would to God that medicine possessed a greater number of remedies called specific, which are employed in the mode of treatment which we shall hereafter name synthetic. Then it would not be so often impotent. But well established specifics are very rare, and on this account we have recourse the more frequently to the expectant method, or to the analytic method, the results of which are much less certain. It too often happens, also, that none of these methods succeed. Then the practitioner is reduced to experimentation,—he must attempt some exploration; but in these cases even, he does not go by chance, but is

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* Preliminary Discourse.

always guided by certain analogies more or less remote. His conduct does not then cease to be rational, and on this account we denominate this way of proceeding, the *perturbative* or *explorative* method. This latter method is doubtless the least satisfactory and the most defective of all. The aim of science should be to restrain its employment more and more, and to enlarge, on the other hand, the domain of the other methods, and, principally, of the one we have called synthetic.

"Barthez," says one of his biographers, "possessed, in a very high degree, all the faculties of the mind, especially those which constitute a genius for sciences, viz: a prodigious memory, a vast capacity for facts, an inconceivable patience to consider all their aspects, the strength of mind necessary to seize all their relations, and a great aptitude to form and follow the connections of abstract ideas. He understood whatever he studied. His immense reading, and the knowledge which he had of numerous languages, had rendered him familiar with the philosophers and wise men of all time and every country. The works of Barthez should have exercised an influence on the whole medical world, but they were scarcely felt beyond the school in which he taught. Besides, many have confined themselves simply to condemning them, and sometimes, even, without knowing them."*

If the influence of Barthez on the medical world has not been as general as might have been expected, it is owing to some of the following circumstances: First, his system rests, as we have shown, on an amphibological base; and nothing is less proper than doubt, to excite the imagination, and make a conquest of proselytes. Secondly, he affects a little too much in his demonstrations, an abstract form, which is not within the comprehension of every mind. Thirdly, and lastly, the epoch of his greatest renown corresponds with that of our revolutionary troubles,—with the terrible catastrophes that overwhelmed France, and excited entire Europe,—an epoch most unfavorable for the propagation of a scientific System.

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## ART. VI. ORGANIC DYNAMISM.

While Stahl, the severe logician and bold reformer, pushed his analysis to the last limits, and pretended not only to determine the essential and fundamental function of life, but also to go back to the primitive agent of that function, which he affirmed to be nothing else than the rational and immaterial soul, Frederick Hoffman, a less renowned reasoner and more timid reformer, confined himself to seeking what is

*Dezeimeris' Dict. Hist. de Medecine, Art. Barthez.

the essential and fundamental phenomenon of life, without explaining himself on its motor nature. This was, as is seen, to simplify the question, or lower the problem a degree. But, reduced to these terms, the problem is still insoluble, as is proven from our philosophic aphorisms—the certainty of which is seen in the fruitless efforts made to that end up to this time.

The Iatro-chemists and the Iatro-mechanics had attempted in vain to explain the functions of organized bodies by the general laws of matter. Their theories, more or less subtile and brilliant, had captivated only a part of the medical public; a certain number of judicious and attentive observers had always rejected them. They recognized that organized bodies are endowed with particular forces distinct from the general forces of crude matter: from which they concluded, justly, that physiologists should deduce the laws of living or organic forces from the direct observation of vital phenomena, in the same manner as the philosophers and chemists deduce the laws of the general or inorganic forces, from the observation of the phenomena in crude matter.

The school of Cos, the Hippocratists, the Animists, the Vitalists, had already proclaimed this truth; but they had all supposed the existence of a principle, distinct from the organs, and giving an impulsion to the organism, and directing its acts towards an end, and according to a preconceived plan. This principle was called by some, nature; by others, the soul, or archeus, or vital principle; but always the same idea reproduced under different forms.

A class of modern physiologists have thought that we should consider the vital forces as inherent to the organs, and study the action of these forces, in order to discover their laws, without engaging in the consideration of the organizing principle—just as the philosophers and chemists regard the general forces of crude matter as inherent to that matter, and seek to determine the laws which regulate the action of these forces. Setting aside the idea of the primary motor force, I give to this class of physiologists the name of *organo-dynamists*, to indicate that they do not separate the active power or force (*dynamis*) from the organ in which it resides.

Frederic Hoffman lopped off from philosophy the ferments and acridities of the chemists, the considerations of the mechanicians on the contractile force of the heart, the capacities of the vascular orifices, and the form of liquid molecules; also the conjectures of the Animists, touching the essence of the soul, or the vital principle. By all these retrenchments, his doctrine acquired a simplicity which is its principal merit. Besides it is presented with an elegance and clearness that renders its perusal both easy and agreeable. Unhappily, the translation which I have been

obliged to use is not marked by these same qualities, as may be seen by the following extracts.

"I will give," says this author, "as a basis to my reasoning on the whole theory and practice of medicine, the definition of life. Now, this is what I understand by this word: life is the movement of circulation of the blood, and other humors, produced by the systole and diastole of the heart and arteries, or, to speak more properly, of all the vessels, and all the fibers, maintained by the contact of the blood and the spirits, and which, by means of the secretions and excretions, preserves the body from all corruption, and sustains the functions of every organ. The circulation is, indeed, a vital movement, that preserves the blood from putrefaction, to which it is extremely subject. The heat, forces, elasticity, firmness, and tension, depend on it; and so, also, the different inclinations of men, the traits and characteristics of the mind, and even wisdom and folly.

"To guarantee, then, the human body from disease, pain and melancholy, requires nothing more than to give to the blood the necessary aid and succor, and especially to prescribe a regimen appropriate to maintain the circulation and the excretions in a normal state. To treat disease is nothing else than to cause to return to their natural condition the blood and liquids which have become deranged.

The advantages of the circulation being so evident, and as nothing is able to move of itself, is it not natural to seek its cause? This research is not from pure curiosity, for he who knows the causes of the circulation, can see much more easily what can promote or retard it, or what would be salutary or injurious to the health—two points, the knowledge of which constitute, principally, medicine.

"After having seen that the causes of the circulation are the contraction and dilatation of the solid parts of the body, and that all the movements of the fluids depend on these, we can not avoid going back to the study of the causes of this contraction and dilatation. Now, I can see none other than the blood; for it is not only composed of solid and humid principles, but also of a sulphurous matter, susceptible of a very active movement, of air, and of the ethereal matter, which is secreted in part in the brain, with an extremely tenuous lymph, which serves it as a vehicle.

"Let us examine, now, how the concourse of the blood, and the nervous juice, in the organic parts, produce in them the vital movement of contraction and dilatation. All the fibers of which the organic parts are composed have naturally very much elasticity, and being stretched by the influx of the liquors, not only contract and relax, but even return from a point of too great contraction to their natural

state. The diastole is, then, always the cause of the systole, and *vice versa*. Thus, the machinery of the heart is the perpetual motion, sought unsuccessfully for a long time; for the blood excites the heart, which gives motion to the blood, and by this mechanism the cause produces an effect, from which arises the reproduction of the cause itself." *

This physiological theory is, as I have said, one of the most simple, but it must be seen, also, that it is not remarkable for strength of reason. I shall not attempt to uncover, in detail, the errors that it includes; I will only call the attention of the reader to the final proposition, which is the top stone of the whole doctrine: the blood excites the heart, which in its turn gives motion to the blood; and behold, exclaims the author, with artless admiration, the perpetual motion found! But the reader has easily seen that the explanations of Hoffman turn in a vicious circle, and that, in short, they explain nothing.

Let us see, now, some practical consequences of this theory: "Diseases of every species being only a union of the natural movements, may then, as all the vital movements, be associated in two classes: the systole and diastole; in other words, contraction and dilatation; for if the contraction is too strong, or too long, it is called spasm; if the dilatation err in excess or duration, it is called atony. Now, what serious trouble do both these defects produce in the circulation! In one, its equality is broken, in the other its free course is greatly interrupted.†

"Since the movements can err only by augmentation or diminution, we must conclude, from this, that there is only need of two classes of remedies, namely: one capable of calming the convulsive movements, called in the schools, sedative and anti-spasmodic remedies; the other, called confortatives or tonics, which are appropriate to give to the flabby and relaxed parts their natural tension."‡

Thus the illustrious Dean of the University of Halle leads us, by a circuit, to the pathological and therapeutical dichotomy of the ancient Methodists; a dichotomy which considered diseases and remedies from two points of view only, and is entirely insufficient in the practice of the Art, since it rests on a hypothesis contrary to observation; that is to say, that there are only two sorts of modifications in the animal economy.

The argument of Hoffman is weak, and lacks depth; it is very superficial, and never carries a principle to its extreme consequences, which denotes a mind more observing than logical. This judgment, which we

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* Medecine Raisonnée d'Hoffman, translated by Bruhier. Paris, 1739.

† Ibid. ‡ Ibid.

should form *a priori*, in reading the "Rational Medicine" of this author, is confirmed by his biographers. Hoffman, they say, enjoyed during his life the reputation of the greatest physician in Europe. Boerhaave himself seems to have rendered him this testimony on a memorable occasion. Having been consulted by the king of Prussia, William I., he replied to that sovereign that the best counsel that he could give him was, to apply to Hoffman.

A practitioner so eminent should have made theory subordinate to practice; that is to say, estimate the first only in regard to the services it could render the second, and judge of the truth of a doctrine by its accordance with pathological and therapeutical facts. Such is, indeed, the rule that F. Hoffman establishes to appreciate the value of a medical doctrine. "The character," he says, "of a true and solid theory in Medicine consists in its appositeness to the practice, or, in other words, in its abliity to explain all the circumstances in the histories of diseases, in the succession in which they have appeared, and to draw from them useful consequences in the practice, in order to give rational and advantageous counsels."

But none of the theories professed in his time could fill these conditions in a complete and absolute manner, and he could do nothing better than to take, in each one of them, what appeared to him to be the most useful and rational, without being able to account perfectly for the motives of these determinations, and justify them by a solid argument, acting, in that respect, like those whose choice would result from instinct rather than reason; in a word, he was eclectic, as he also declares himself in his eulogy of that ambiguous doctrine. Still, he inclines to Solidism, which he had freed from the calculations with which the iatromechanics had loaded it. "We must admire," he says, "a physician free from all bondage to all sects or hypotheses, who puts everything in the balance, and adopts only what is conformable to reason and experience, and rejects, carefully, that which is opinion only." Very well! nothing is better than to adopt for guides, reason and experience; but the difficulty is, never to be separated from either. Now, up to this time, none of the medical theories that we have announced, without even excepting that of Hoffman, has resisted the test of this double light.

Perhaps we shall be more successful in the future; possibly we shall encounter, at last, a physiological doctrine which will account perfectly for the phenomena of the animal economy, both in a pathological and normal state. We proceed now to enter into an order of new ideas, of which antiquity offers us no model, and to which the theory which we have just studied serves in some sort for an introduction. Up to this time, no one had considered the movements of the organized solids but

as the effect of elasticity. Hoffman himself represents them to us in no other manner, in the passages which we lately quoted. But when the great Haller had demonstrated, by a series of experiments, that the contractility of muscular fibers, and other tissues, is a special property of living solids, essentially distinct from elasticity—from that moment, it began to be suspected that this property recently discovered, which was named *irritability*, might well be considered as the characteristic sign of organization, the source of all the phenomena of life.

Cullen, author of a very remarkable nosological classification, of which we have already spoken, attempted the first to establish a medical doctrine on the development of the phenomena of irritability. Possessed of a cool and observing mind, he comprehended, in the onset, that if he would assume this property as the base of the functions of the animal economy, he must not push his researches farther, but admit it as a primitive fact, whose causes escape our investigations; else he might fall into the vicious circle into which Hoffman and so many others had been drawn, who, after having taken the circulation of the blood, or any other phenomenon, as a starting point, were obliged afterward, to make this primordial phenomenon depend upon some other function. Nevertheless, he could not avoid these contradictions; for when we have adopted a false principle, it is impossible for us to escape the consequences that flow naturally from it. We are thus drawn from deduction into deduction, in spite of ourselves, by a current stronger than our will.

Cullen may tell us as much as he pleases, that irritability, being a primitive fact, there is no necessity for seeking its cause; nevertheless, an instant after, he violates, himself, this injunction, in affirming that irritability is aroused and put in play by an extremely subtile fluid which the brain secretes, and which is distributed everywhere by the nerves. If you, then, demand whence comes this nervous fluid, this physiologist will respond that it originates in the most subtile portions of the blood and lymph, which are carried to the brain by means of the contraction of the heart and arteries. In short, according to this system the irritability of the heart is sustained by the nervous fluid, which fluid is itself a consequence of the irritability of the heart. Reaching this result, and perceiving that he had fallen into a vicious circle, which he had hoped to avoid, Cullen ends by avowing, as all the great physiologists before him had done, that the phenomena of life forming a circle, it was a matter of no importance where we begin or end in their study. It is not, therefore, to be wondered at, that sometimes the circulation of the blood was supposed to be the principle on which depended all the functions of the animal economy; and again, that the nervous

system is the most important of all the organic aparatus—the one that first feels the impression of excitants, and transmits it to others; in a word, that gives impulsion to all the movements of the organism. "We adopt," he says, at the commencement of his "Treatise on Materia Medica," "this maxim: *Remedies do not act upon a dead body*, because their action depends neither on the laws of matter nor those of motion, but on the principles of life. These are, then, the principles which should be the object of our researches, and they form a circle in such a way as to leave us in uncertainty as to what point we should commence or end. The circulation of the blood appears to be, nevertheless, the principle of vitality on which all others depend." Cullen did not take the trouble to prove in what the circulation of the blood appeared to him to have priority over the other principles of life; he contented himself with recalling the opinions of Boerhaave on that subject. However, we shall find him, further on, giving the priority to the nervous system.

Let us leave, for the present, this discussion of general principles, and pass to the application which the author makes of them to pathology and therapeutics. He commences by declaring that the autocracy of nature, adopted under whatever form, by different sects, has been prejudicial to the practice of many physicians, from Hippocrates down to Stahl. He avows himself, also, the adversary of the empirical method, and of all specific remedies, the number of which he thinks every one ought to diminish as much as possible. "I would go," he says, "much further, and show how much the autocracy of nature, adopted under whatever form by the different sects, has been prejudicial to the practice of all physicians, from Hippocrates to Stahl." In his Institutes of Medicine he proscribes, rigorously, the employment of specifics; however, he is forced to admit them in his treatise on materia medica, and makes the following avowal, which is worthy of being transcribed: "I have testified elsewhere my repugnance for specific medicines; but we shall, perhaps, be forced to retain many of them still, though we should make efforts to diminish their number as much as possible."

Thus Cullen repelled the expectant method, the only one that we could or should employ on many occasions, and the synthetical method, vulgarly named the empirical, the most efficacious of all. He declares that the cure of diseases should be particularly and nearly uniquely founded on the knowledge of their proximate causes, or, in other words, he rejects all methods of treatment as irrational, except the analytic—a method often defective, but which seduces us by an illusory appearance of profundity. Besides, this author makes use of analysis with admirable sagacity, whether he attempts to explain the generation of morbid

phenomena, or to justify the employment of remedies. The following are examples of the application of this method to two of the most important and difficult cases in pathology:

I. "Our doctrine of fevers," says Cullen, "is reduced to the following principles: The remote causes are certain sedative influences acting on the nervous system, which, diminishing the energy of the brain, produce, necessarily, debility in all the functions, and particularly those of the minute vessels of the surface. Nevertheless, such is at the same time the nature of the animal economy, that this debility or atony (the proximate cause of the fever) becomes an indirect stimulant to the vascular system. This stimulant, aided by the accession of the chill and of the spasm which accompanies it, augments the action of the heart and great arteries, and continues thus until it is able to re-establish the energy of the brain, and communicate this energy to the small vessels, and re-animate their action, and especially, by this means, destroy their spasms. The latter being relieved, the sweat, and all the other signs of relaxation of the excretory conduits, take place."

II. "All the phenomena of inflammation concur to prove that the impetuosity of the circulation of the blood is accelerated in the affected part; but, in this case, the action of the heart is not always augmented; we may therefore, presume that the acceleration of the circulation of the blood in the affected part is due especially to the augmented action of the vessels of the affected part itself. ⁂ ⁂ ⁂ The spasm of the extremities of the arteries that sustain the increased action of the blood, which is pushed into them, must then be regarded as the proximate cause of inflammation, at least in all cases where the inflammation is not produced by the direct action of stimulants, and even under such circumstances we may suppose that these occasion a spasm in the extremities of the vessels."

I have no need to remark how much this doctrine agrees with that of F. Hoffman; in one, as in the other, only two general causes of diseases are admitted: spasm, or the augmentation of tension, and atony, or relaxation. Only the Scotch pathologist places the point of departure of morbid phenomena in the nervous fibrillæ, which are always supposed to receive the first impressions of morbific agents, and communicate them at once to the last arterial ramifications, while the German pathologist considers the excessive afflux of the blood as the first motor of abnormal movements in the parts, as the primitive cause of the alternate tension and relaxation of the fibers.

Cullen, like Hoffman, was a circumspect practitioner and skillful observer, rather than a profound dialectician. He did not hesitate to abandon his theory whenever it appeared to disagree with his

experience. So, notwithstanding his repugnance for specifics, he readily admitted a goodly number into his Materia Medica; and notwithstanding his inclination for Solidism, he admits remedies which are supposed to act on the humors, such as alternants, anti-acids, anti-alkalies, etc. We do not bring against him any reproach for this; we praise him, on the contrary, for having stated, in many cases with great precision, the curative indications from the apparent phenomena of the diseases, without stopping to inquire whether they conformed or not to his theoretical explanations. In continued fevers, for example, he recognizes three general indications to be fulfilled: First, to moderate the violence of the reaction; second, to remove the causes, and prevent the effects of debility; third, to arrest or correct the tendency of the fluids to putrefaction. In intermittents, he points out three curative indications: First, during the period of intermission, to provide against the return of the paroxisms; second, during the paroxisms to take such steps as would procure a perfect crisis of the disease; third, to remove obstacles which might might prevent the fulfillment of the first two indications. If we consult the most recent treatises of Medicine, we shall see that the curative indications laid down in them are almost the same for these same classes of diseases; so that in regard to therapeutics, the general views have changed but little since Cullen. Besides, to carry out these views, he employed nearly the same means as ourselves, though his manner of studying diseases and the action of remedies was very different from ours; which proves that the greater part of the rules of practice are founded on pure observation, and independent of all theoretical interpretation, or comply equally with a variety of different interpretations. This is a consoling fact that history alone could make evident, and which justifies in our eyes the practice of past ages, notwithstanding the incessant variations of theories, as it will justify in the eyes of our successors, our present practice. Cullen had the pain to see spring up at his side, in his own home, a doctrine which, though hardly hatched, became a menacing rival of his own.

John Brown, born of obscure parents in a village of Berwick, in Scotland, was remarkable, from his early youth, for an extraordinary aptitude for acquiring languages, a decided inclination for scholastic dispute, a pedantic tone and manner, and somewhat irregular conduct. Having abandoned theology for medicine, he fixed his residence in Edinburgh, where he assiduously followed the lectures of the professors. He afterwards repeated and explained them to other students for a compensation. He also translated into Latin the theses of those who were not sufficiently familiar with the language, and wrote in it on every subject, for those who preferred paying for such labor, rather than perform it

themselves. He was particularly entertained and countenanced by Cullen, who even took him into his family in the character of preceptor of his children. This agreeable relation subsisted during twelve consecutive years between these two men, whose characters and minds were so different. The protégé was grateful for the countenance of his preceptor, aided him in his labors, and unceasingly praised him. But some trifling matters of mutual discontent grew at length into coldness, and changed the old friendship which had united them into an irreconcilable hatred.

Their rupture broke out about the year 1778, and in a short time after, Brown published his Elements of Medicine. The eulogies which he received on that occasion, and the encouragement of some friends, determined him to make this work the foundation of a public course of lectures, in which he gave his theory every possible development. Then commenced between the master and the pupil an obstinate conflict, which agitated the University of Edinburgh for several years; a conflict but little interesting to posterity, on account of the personal vanity and interests, which are much more conspicuous there than its scientific interest. Brown, whose pride, inflated by partial success, made him indifferent to every one—whose impassioned eloquence overwhelmed with satiric strokes whoever shared not his opinions, was in the end alienated from the whole Faculty, who endeavored, henceforth, to interfere with his teaching. In vain, though sustained by the zeal of some enthusiastic partisans, and by his natural pride, he essayed to make head against the storm; he was compelled to give way before the continual increase of his enemies. In 1786 he put in execution the project which he had meditated for some time, of going to exhibit himself in a greater theater. He embarked for London, where he died in 1788, aged fifty-two years, a victim to his intemperance and medical delusions.

Brown employed some of the ideas of his master to develop a doctrine much more simple in appearance, but founded entirely on abstract considerations; a doctrine in which every provision seems to be made for discussion, but none for practice. Cullen had said that the nervous system receives the first impression of excitants, and transmits it afterwards to the other organs endowed with motion and vitality. Brown explains thus, the same thought: "Life is only sustained by incitation. It is only the result of the action of incitants on the incitability of organs."* Cullen regarded the atony of the small vessels as the proximate cause of fever. Brown, improving on this hypothesis, admits, with hardly any exceptions, only hyposthenic diseases. These are the

* Elements of Medicine, Part I, chap. II.

only relations that exist between these congenerous doctrines. On all other points they differ, or are in opposition. One is the work of a skillful practitioner, who departs as little as possible from observation, or who hastens to return when his arguments have carried him away from it—loving much better to renounce, for the moment, his theory, than the testimony of his senses. The other is the conception of a mind essentially logical, and possessing a strong imagination, but of an observer preoccupied or distracted, who sees objects only through the prism of his ideas,

"We do not know," says Brown, "what incitability is, nor how it is affected by inciting agencies; but whatever it may be, every being which begins to live, is provided with it to a certain degree. Our ignorance on the nature of this faculty, the poverty of ordinary language, and the novelty of the doctrine, obliges me to employ peculiar expressions. I will say, that commonly, incitability abounds, when we apply a slight stimulus; that at other times it fails—is crushed or consumed, when the stimulus is too violent. Here, as elsewhere, we must hold to the truth. Avoid carefully, since they are nearly incomprehensible, the dangerous question of causes, that venomous serpent of philosophy. Let no one, then, believe, from what I have just said in regard to the nature of incitability, that I pretend to decide, if it is a substance, and therefore sometimes augments and again diminishes, or if it is a faculty inherent in matter which is sometimes excited and again languishes; nor that I wish to resolve in any manner a question so abstract. These researches have nearly always done much injury to science."

Brown employs here the same artifice as Barthez. To evade the objections that might be brought against it, if he should affirm that incitability is a substance, or if he affirmed that it is a faculty inherent only to the organs, he shelters himself behind the doubt. By this artifice, he reserves to himself the advantage of being able to consider this equivocal being, sometimes, as distinct from all parts of the body, having its own proper existence, and again, as united to the organs in an inseparable manner. But the doubt of Brown is only the ruse of the sophist. In every other part of his work we do not find the least appearance of skepticism; everywhere its tone is dogmatic and affirmative. The author considers so well incitability as a being distinct from the organism, that he even goes so far as to attribute to it the formation of the organs. "The first cause," he says, "of the formation of the solids, and the sole means of their subsequent sustenance is incitation."

This is rapid progress in a little time. This timorous philosopher, who dared advance nothing touching the nature of incitability, who would banish from his doctrine the venomous serpent of causes, does not

hesitate now to say, that incitability is the first cause of the formation of solids, that it is what creates and what determines the state of the simple solids and the humors. The skepticism which he affected at the commencement is but an oratorical artifice, made use of to introduce his physiological principles without discussion. In fact, this principle could not resist a serious examination, for in the onset, an impassable objection could be made to it, for it might be said: If the first cause of the formation of the solids is incitation, on what does it exercise itself anterior to their existence? There is no response possible to such a question, in Brown's entirely Solidist system.

Now, as we have shown the weakness and nothingness of the basis on which this whole system rests, let us follow a little its developement. The Scotch physiologist distinguished only two pathological states—one consisting in an excess of incitability, which he names the *sthenic* diathesis; the other, constituted by a want, more or less notable, of the the same faculty, which he designates as the *asthenic* diathesis. Besides, Brown considers these two state as affecting the entire economy, rather than any organ in particular. A local affection rarely appears to him to be worthy the attention of a practitioner: he gives but little attention except to the general state of the body, sustaining this method of the study of disease by a singular calculation.

"Let the principal affection," he says "be as six, and the minor one of each part as three: the number of parts but slightly affected as one thousand; the partial affection will be to the general affection of the rest of the body, in the ratio of six to three thousand." He concludes from this, that in general disease, each local affection, however redoubtable it may be otherwise, must be considered as a part of the first, and therefore the remedies must be directed, not to the part chiefly affected, but to the whole organism. This strange calculation is not the result of observation—it had no foundation but in his imagination, and is in flagrant contradiction to the results of daily observation.

After having reduced all diseases to two genera, and withdrawn from pathology the study of local lesions, Brown arrives, by a subtile argumentation, to consider the affections of the *sthenic* order as prevailing in a very small number of instances, so that the diseases of the asthenic type comprehend nearly the totality of affections. According to this theory, a physician is rarely ever mistaken if he orders, in all his cases, remedies of an exciting nature. When I say always, I exaggerate, for he would err three times in a hundred, which is sufficiently accurate in medical practice." *

* The following explanation is thus given by one of the fervent expounders of the Brunonian doctrine: "However this may be, as in general, the diseases in

Never since the days of Thessalus (of charlatan memory) had any one simplified to such a point the study and practice of medicine. We may even say that in this respect the Scotch pathologist left far in the rear the physician of Nero. To this attraction, well calculated to tempt students and practitioners, the doctrine of Brown joined the advantage of being presented in an energetic and captivating style, full of imagery, which suffices to explain its rapid progress. But this doctrine, so seductive in its exposition, so easy in its application, is one of the most disastrous that man has been able to imagine, for it tends to propagate the abuse of diffusible stimulants, of which spirituous liquors make a part, an abuse excessively injurious to health in general, and the intellectual faculties in particular—an abuse to which man is too much inclined, naturally, and which the sophisms of Brown may have contributed to spread in all classes of English society.*

One is frightened in reading the long list of diseases against which the Scotch pathologist does not hesitate to prescribe the most energetic stimulants. Here is a sample of this list, extracted from the table of Linch: plague, confluent variola, apoplexy, paralysis, gangrenous angina, synocha, typhus, hydrothorax, phthisis, dysentery, etc.; such are the affections which this bold theorist advises to be treated by electricity, opium, ether, spirit of wine, and other stimulants of this nature, to be employed in increasing doses, in proportion as the diseases progress. "No other systematic author," says M. Cotanceau, "has less known the totality and the details of medicine, and one has reason to be astonished, on each page of his book, at the imperturbable assurance with which he accommodates the particular facts of pathology to the consequences of his theory. As a nosographer, he is below all; and I know no treatise on popular medicine, that does not include a history of diseases very superior to his. Though he continually pleads, as is usual, the increased number of facts in favor of his doctrine, we recognize every moment the absolute want of observation, and the most superficial judgment. Neither is there anything in his work to lead you to suppose that he has studied authors any more than nature; or if he has read any, it was without meditating upon them, for he never quotes any, scarcely, nor combats any theory—he believes that he has extinguished all by the exposition of his own. He advises his students,

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which stimulants are useful, are, from the number of those that require evacuations, in the proportion of ninety-seven to three. It is very probable that the alexipharmic was universally more useful than the antiphlogistic or evacuant method." Nouvelle Doctrine de Brown, translated from the Italian by Lafont Gonzi, introduction, p. 125. Paris, 1807.

* Journal Hebdomadaire de Med., 27 Feb., 1830.

nevertheless, to learn *what is necessary in anatomy*, to open dead bodies, and *study the illustrious Morgagni*. If he had done this himself he would have seen himself refuted on every page." *

Notwithstanding its defects, the system of Brown made rapid progress, principally in Germany and Italy; but it is not difficult to understand this success, when we think that this system favored, remarkably, the indolence of physicians, in reducing the science and the art to an extreme simplicity, and which was not less agreeable to the patient, as it countenanced intemperance. Joined to this, the attraction of novelty, the charms of a passionate language which indicates conviction, and you will comprehend that nothing more was needed, or even as much, to obtain numerous and enthusiastic proselytes. In Italy, Brunonism was soon modified in an important manner, which changed entirely its economy. Rasori, while admitting two orders of diseases, founded on the excess or want of *incitation*, reversed their numerical proportions. According to him, the asthenic affections are rare, and the sthenic much more common. According to Brown, we must stimulate unceasingly, but with Rasori contra-stimulants were much more frequently used, viz: antiphlogistics and sedatives. Moreover, the Italian school did not judge the value of remedies from pure theoretical considerations, but from experiments, undertaken with the view to determine their value.

Brunonism did not find as easy access into France, which was doubtless owing to the anatomical direction of studies in the school at Paris, and the influence of the Vitalism of Barthez in the school at Montpellier. Nevertheless, it had commenced a progress there, and had gained some ground, when it encountered an impassioned and powerful adversary, who, employing by turns the lights of observation, and the weapons of dialectics, assaulted it, piece by piece, and gave it no quarter until he had laid bare, and fully exposed, its vices and its dangers. Brown stopped to consider, at this superficial and common observation, that in the greater number of diseases there is a diminution of the general forces; and without troubling himself about the condition of the organs, he hastened to conclude that it is necessary in nearly every case to administer tonics and stimulants. Broussais, penetrating further in his observations of morbid phenomena, demonstrated that the general debility of the sick coincides more frequently with an exaltation of the sensibility of organs; whence he concludes, that far from attacking these organs with stimulants stronger than usual, it is necessary, on the contrary, to diminish the energy of the habitual stimulation—that

* Biographie Medicale, art. Brown. Paris, 1820.

is to say, employ debilitants and sedatives.* If we may reproach the French pathologist for having maintained the narrow base of Brunonism in establishing his nosological classification on the want or excess of irritation, it is no less true that he has rendered an eminent service to science and humanity, in giving the precept, to proportion the degree of stimulation to the receptive condition of the organs, rather than to the general state of the forces, because, in the greatest number of cases, extreme prostration is accompanied with great irritability; in other words, a very slight tolerance for stimulants.

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### ART. VII. EMPIRICISM.

From Galen to an epoch very close to ours, the Empirical doctrine was not professed openly by any physician of reputation. This doctrine, which threw so much *éclat* over the school at Alexandria, had fallen into such discredit that not a single writer of the middle ages, or on the revival of letters, had dared declare himself in its favor. Its name became the synonym of folly and charlatanism, and implied, then, the absence of all rational notions in the Healing Art. An empiric was a man who ordered remedies without any appreciation of their therapeutical effects, without any discernment of the diseases for which he employed them.

We have developed, heretofore, the causes of the fall of Empiricism, and the contempt which was attached to its name. We have demonstrated that the principal of these causes consisted in the opposition that existed between this medical system and the philosophical theories then prevailing. All the ancient philosophers, in fact, to whatever sect they belonged, agreed in saying that the study and exposition of any science whatever, must commence at its principles. Now, the word principle signified, sometimes, a general proposition, from which might be drawn a certain number of particular properties, as a source, *a fonte*. For example, the proposition, *two quantities equal to a third, are equal to each other*, is a principle, or an axiom of mathematics whence are deduced a crowd of theorems. Sometimes the same word designated a simple substance, indivisible, or so considered, and concurring to the formation of compound substances; thus, fire, air, earth, and water were thought to be the elements or principles of all bodies. In philosophy, the word principle designated, sometimes, the first rudiment of an organized body, the elementary fiber, or, also, the intrinsic and natural

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* See his Examen des Doctrines Medicales. Paris, 1816 et 1829.

force which resides in living beings, and concurs with exterior circumstances to the production of all the phenomena of their existence. In fine, from etymology, and common use, principle is the synonym of commencement.

Consequently, it would have been supposed as directly opposite to common sense, if any one had commenced the study of a science by any thing else than its principles; thus, the study of physics was begun by the examination of the theory of the elements, of that of the atoms, etc.; in a word, by the examination of all the cosmogenic theories possible; that is to say, he must engage, from the onset, in insoluble questions, the source of interminable discussions. In physiology, he must attend, in the first place, to the research for the principle of life, and the elements of the human body; in pathology, he must, before everything else, determine the essence, the proximate cause, otherwise called the principle of diseases.

The Empirics came and declared all these researches chimerical, and insoluble, and regarded as mere dreaming all the speculations of the philosophers and physicians in this respect. Bold reformers, they attempted to overturn entirely the established dialectic order, and commenced the study of the sciences, by the examination of facts, by means of observation and pure experience! They assumed that reasoning should not surpass the limit of sensible phenomena. This was, as is seen, to sap the scientific edifice at its base and overturn all received ideas. The minds of men were not ready for a reform so radical, and they therefore must fail. The philosophers, menaced by Empiricism in regard to what they held most dear, their theories and their systems, in which was constituted the major part of their scientific lumber, repelled the new doctrine as an enemy of all knowledge; they loaded it with their disdain, denied it the title of rational, and banished it to the domain of stupidity. Such is the history, summarily, of Empiricism, up to the seventeenth century of the Christian era, when our Reform Period begins.

At this epoch, a sect of modern philosophers started up, who demolished the Platonico-peripatetic philosophy, and rebuilt the scientific edifice on new foundations. Taking the sensations as the point of departure of our knowledge, they demonstrated that the first ideas which are formed in our minds by impressions upon the senses, are particular ideas, relating to individual objects; they proved, *at least for the physical sciences*, that general ideas and axioms, instead of being the commencement, the base of the scientific pyramid, are its termination, its summit. They assumed that our understanding can not surpass, in its conceptions, the limit of observed facts, without falling into the emptiness of hypothesis. This

was to run full sail into Empiricism. Thus the new philosophy was called experimental, which signifies the same thing as empirical, and those who cultivated it were named sensualists, or better, sensitists, because they referred all our ideas to sensations. These philosophers proceeded, in all their reasonings, from particulars to generals, that is to say, by induction.

On the other hand, the partisans of an opposite doctrine, those who are now called rationalists, or spiritualists, because they admit either innate ideas, or modes of acquisition proper to the mind and innate to it, held to the ancient method, that which goes from generals to particulars, or deduction; but they modified their doctrine in the sense that they agreed that in *the order of sensible things*, reason can not pass the limits of experience, without mistaking its rights and its powers.

A change so profound in philosophy, and at the same time so favorable to Empiricism, should have opened the eyes of physicians, and caused them to give up their prejudices against this system. But Medicine is a science so abstruse, the truths of which are so difficult to discern, and experience itself is so deceptive, that their prejudices resisted for a long time the progress of light, and they could not be eradicated but with great pain. Thus we see the most eminent physicians of the Reform Period embarrassed on the subject of Empiricism, sometimes branding this doctrine and its advocates with the most opprobious epithets; again representing them under much more favorable colors, and even advantageously; sometimes repelling their maxims with disdain, again accepting and eulogising them. This subject was, for the writers of the two last centuries, a source of perpetual contradictions.

We have already quoted passages in which Baglivi condemned, entirely, the Empirical sect; a little farther on he changes his opinion and speaks of them in an entirely different manner. Let us recall only the last reflection which he has made on this subject. "I should not think thus," he says, "of rational and learned Empiricism, the fruit of method, not of accident, directed and sustained by intelligence, elevating itself to the highest truths by the attention and persevering observation of phenomena. Such an Empiricism has always obtained the approbation of enlightened men, who have endeavored to enlarge it, as a mode of acquisition conformed to our nature." What other species of Empiricism could have been had in view by those learned physicians of Alexandria, to whom Galen renders so honorable a testimony, who disdaining the titles of Hippocratists, Herophilians, Erasistratians, and every other denomination borrowed from a proper name, called themselves

simply, experimenters. It was certainly not the Empiricism of market houses and street corners that such a class of men avowed.

Zimmerman, that eloquent though somewhat prolix apologist of the experimental method, does not show himself more equitable nor more consequent in regard to the Empirical sect, of whom he draws two portraits, which no one could ever believe to have been drawn by the same hand. Here is the first: "An empiric in Medicine is one who, without dreaming ever of the operations of nature, such as signs, causes of diseases, indications, methods, and especially discoveries of different ages, asks, simply, the name of a disease, and administers drugs at hazard, or distributes them at random, following his routine and recognizing no art. The experience of such an Empiric is always false, because he practices his art without knowing it—he follows the recipes of others without examining their causes, their spirit, and aim."*

Here, now, is his second portrait, which resembles but very little the preceding one: "Serapion and his successors opposed the research for hidden causes and only paused to consider those that strike the senses. In this they were right; it was reserved to anatomy to uncover these secret causes, but anatomy was still in its infancy in the times of Serapion: moreover, causes at that time were only sought in philosophy, so that, necessarily, they must fall from one error into another, in the midst of so much obscurity. We see, therefore, that the authors of the Empirical sect had a design praiseworthy only in itself. * * * * They accepted only what is appreciable by the senses, and consequently, they thought that the senses and memory were alone necessary for the practice of Medicine. If they admitted some reasoning, it was so simple that it was not possible to be misled by it, and so natural that it seemed to be self-evident. They did not proscribe reasoning then, except when it was based on false principles, and when nature was judged by false reasoning. Philinus and Serapion, therefore, are not to be blamed if their sectators or successors have turned away from their manner of thinking, and if they have condemned erudition, anatomy, physiology, and philosophy which is the soul of Medicine. The founders of Empiricism sought true experience and their stupid successors content themselves with that which is false."

It would be easy for me to establish, by a crowd of other examples that the same contradictions in regard to the Empirics and Empiricism are met with among the greater part of the most celebrated practitioners and most renowned nosologists of the Reform Period. To do this I

* Traité de l'Experience, translation of Lefebre, Montpellier. 1824.

would only have to open the writings of Torti, Sydenham, Stoll, Morgagni, Sauvages, Cullen, Borsieri, Barthez, Ph. Pinel. I. P. Frank, and others; in all I could show the maxims of the experimental philosophy adopted, proclaimed, and the name of Empiric repulsed and falsified.

The tendency of physicians toward Empiricism, became more and more marked toward the end of the eighteenth century. It did not escape the historian Sprengel, who signalized it as having had birth in Great Britain, and assigned for it, as principal causes, on one hand the propagation of the philosophic principles of Bacon, Locke and Hume; on the other, the discovery of several new medicaments, the employment of which contradicted all the systems adopted till to that time, and whose mode of operation could not be reconciled with any of the reigning theories.* He shows, afterward, the same tendency toward Empiricism in other countries; first France, then Germany, and extending finally into all parts of Europe. "In general," he says, "all the physicians who wrote during the last ten years of the eighteenth century seemed to be in favor of Empiricism. They inclined not toward a blind routine, but endeavored unceasingly to have their opinions accord with experience, and never outstripped in their reasoning the limits assigned by the observation of nature. No one invented any new theories on the nature of the vital force, or the essence of diseases; and if a few did appear, they were received with indifference.† Nevertheless, the return toward Empiricism was only partial, as I have already remarked. The greater part of the writers in Medicine contrived to mingle with their maxims of Empirical philosophy, researches either on the vital principle, or the fundamental and primitive quality of living beings; on the proximate cause of diseases, their nature or their essence—in a word, on a crowd of subjects that are inappreciable to the senses. While they criticise the explanations of their predecessors touching these abstruse matters, they do not hesitate to emit their own opinions on the same matters, without appearing to suspect that they only substitute a new hypothesis for older ones.

Thus Borsieri de Kanifeld, professor of Practical Medicine in the University of Pavia from 1770 to 1785, a learned writer and excellent observer, wishing to give an idea of inflammation, commences by describing it in these terms: "When one realizes in a portion of the body an unnatural heat, and the part is red, tense, painful, with unpleasant pulsations, there is said to exist an *inflammation* or *phlogosis*, because something similar to the effects of a burn is felt. If all these accidents,

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* Hist. Med., section VI, chap. II, T. V et VI.

† Ibid. Sec. XXII, chap. I, T. VI.

or the most of them, concur together, they constitute a disease named by us *inflammation*, and by the Greeks *phlogosis*,—a disease whose proximate cause is extremely obscure, not to say occult, as is shown by the varieties and difference in the opinions emitted on this subject."*

The above description is clear to every mind. There is no student who, after having read and engraved it on his memory, if he possess some skill in clinical observation, may not be in a state to discern an external inflammation from any other disease in a certain phase of its existence; for it is evident that phlogosis, as well as every other species of disease of the organism, does not preserve the same morbid characters in all the phases of its existence. The botanist does not describe otherwise a plant, or the chemist a salt or a mineral. Why then physicians? When they wish to explain a disease, do they not content themselves, in like manner, with depicting the symptoms, the march, the termination—in a word, all the sensible and known phenomena as they present themselves at various stages? Why do they continually pass in their speculations beyond the limits of pure observation? It is because they are not sufficiently penetrated by this axiom which reigns in all the philosophy of the physical sciences: *Reason was only given to us to guide experience; and our minds, in trying to pass the limits of sensations, mistake their rights as well as their power.*

Borsieri, after having thus described inflammation, and stated that the proximate cause of disease is nearly impenetrable, shows over twenty different, and sometimes contradictory theories emitted by the most eminent authors, from Hippocrates to Boerhaave and Haller, on the proximate cause of inflammation. It would seem, as a natural consequence of this exposition, that Borsieri would avoid all new theories on the same subject. Such is, nevertheless, not the conclusion to which he comes; he has not failed to propose, in his turn, an explanation more or less different from the rest, not only on phlogosis, but on each of its symptoms. He falls into a similar and more striking inconsistency still, on the subject of fevers; for having at first affirmed, in proper terms, that it is impossible to determine the proximate cause of this affection, he has not hesitated to form, a little farther on, conjectures on the cause and mode of generation of each of the febrile phenomena. Borsieri was, nevertheless, neither a transcendentalist nor an enthusiast; he was, on the contrary, a wise practitioner and very circumspect theorist, who adopted no exclusive system, but who would choose from each of the

* Institutiones Medicinæ, De Inflammatione, Lipsiæ, 1826, t. I., p. 2. Compare this work with that of J. Rasori, Théorie de la Phlogose, translated from the Italian by S. Pirondi, Paris, 1839.

prevailing opinions of his time that which appeared to him most conformed to reason and experience; in a word, he was eclectic. We see by this example, and by a thousand others which have been, or might be cited, that there is scarcely a writer in Medicine who did not surpass, in his speculations, the limits of sensible phenomena; that is to say who did not fall into the vagueness of hypothesis; but in no department has the tendency of physicians for arbitrary interpretations been more striking and more injurious than in therapeutics. See in what terms a cotemporaneous author has depicted the ridiculousness of this mania: "Intermittent fevers," he says, "are cured with cinchona. Several hundred volumes have been written to explain the *modus operandi* of this marvellous remedy. This whole enormous aggregation of science is not worth the following line, and does not go beyond it: *for intermittent fever, give cinchona.* Opium procures sleep. A multitude of very learned writers have explained the action of this precious drug. Moliere, in this respect, knew as much as can know to-day those who have studied all these beautiful works: *Opium facit dormire, quia in eo est virtus dormitiva.* Let no one consider this a detraction of Medicine, for it is the art of curing, and not the art of explaining cures. A practical notion, well established, possesses no less dignity than a scientific principle."*

Nevertheless, toward the end of the last century some men made praiseworthy efforts to banish from practical Medicine every species of hypothesis. Of this number were Werlhof, first physician to the king of England, at the court of Hanover, and Lieutaud, first physician to Louis XV. The former has left a great many writings, which are remarkable for a spirit of pure observation, judicious principles, and an elegant and pure style. He professes, on the modification of remedies, on the proximate cause of fever and its various symptoms, a prudent skepticism, and recounts, in this respect, an anecdote which we have already given.†

The second has already been mentioned advantageously in this History, for his *Historia Anatomico-Medica*, one of the good works which the close of the last century produced, and for his *Précis de Médecine Pratique*, an interesting composition in several respects, but above all, by the care which the author has taken to avoid all hypotheses, and subtile and arbitrary interpretations. His care is so great in this respect,

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* Vues Pratiques sur les Améliorations Agricoles, * * par M. Dezeimeris, insérées dans le Journal d'Agriculture Pratique, numero de juin, 1845, tirage à part, 1st Mémoire, p. 3.

† See chap. v, of this Period.

that not only he abstains from all conjecture on the proximate cause of diseases, but also, he avoids giving any definition, any general description, either of fever or inflammation. This work was written, evidently, under the influence and according to the spirit of the philosophy of Condillac, but the absence of definitions and generalities does not prevent the existence of a little confusion and obscurity in the totality of the subjects which he presents; so that the judgment which Cullen gives of it, though severe and even partially inexact, is not without some foundation. "It is," he says, "a collection of facts gathered without permitting himself to reason on their causes. Confusion and indecision are the results of its arrangement. This work, moreover, is not exempt from the reasonings that the author pretends to avoid."*

Cullen is mistaken when he accuses Lieutaud of being willing to avoid every kind of reasoning. Lieutaud has pretended only to avoid the discussions which turn upon objects impenetrable to the senses, such as the proximate cause of diseases, the primordial properties of bodies, the vital principle, etc.; but otherwise, far from abstaining from reasoning, he reasons very much, and even too much; whence it results that his book is rather critical than didactic. In this he has, perhaps, made a mistake, and missed the end which he wished to attain, as may be judged by the following extract from his work. †

Thus, parting from the seventeenth century, that is to say, from the commencement of the philosophic reform, we see Empiricism making progress in Medicine, though always hidden under various names.

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* Cullen, Elements of Medicine.

† Horror quem excipit febris; dolor alterutrius lateris, et plurimum tamen sinistri, sterni, dorsi, etc.; sputa cruenta, et spirandi difficultas sunt notissima peripnéumoniæ, signa. Sedulò animadvertendum quod in quibusdam peripneumoniâ decumbentibus nulla erumpant sputa cruenta, licet pulmones verâ phlogosi corripiantur; cur fit ut plures clinici, duce Sydenham, hunc affectum pro peripneumoniâ nothâ habeant; num rectè e mox narrandis patebit. Illud etiam notandum incumbit quod pulmonum phlogosis haud semper tussi, dolore et spirandi difficultate stipetur; uti grassante constitutione epidemicâ 1754, haud rarò inter rimanda cadavera corum quorum cura mihi demandata fuerat, observavi. Peripneumoniam non numguam præeunt ventris tormina, defluxio anginosa, sliusve morbus inflammatorius: nec infida in quibusdam epidemiis censentur hæc prænuntia, in aliâ tempestate planè silentia. De erysipelate pulmonum post Hippocratum et Galenum, mentionem subjecerunt Lomnius et Boerhaavius; sed meris conjecturis suffulta est hæc opino; cum erysipelas solam cutem respicere videatur: cujus retrogressu, materiâ morbosa in quod vis viscos per metastasim ingruente, alter emergit affectus, ob partis fabricam ab erysipelatis indole profecto dispar: Quod pace tantorum virorum per transennam annotasse sufficiat. (*Synopsis universæ praxeos medicæ*, lib. I, sect. 2, *Inflammatio pectoris*, t. I, p. 168. Amstelodami, 1725)

Some call it, with Sydenham, the natural method, others the method of observation, experimental, eclectic, etc.. Some even dare call it by its true name, yet adding some corrective, to take from the word the idea of contempt which physicians commonly attach to it. Thus it is called by some, for this end, rational Empiricism, the learned Empiricism of Baglivi, Sydenham, Stoll, Van Swieten, and Ph. Pinel, when they wished to have it understood that in many circumstances these great physicians made an abnegation of their theories, in order to follow experience only. If we cast our eyes over the history of Medicine during the first half of the nineteenth century, we shall see Empiricism gaining more and more ground, notwithstanding the propagation of Brunonism and other new systems, among which the system of irritation holds a proper rank. We shall see, for example, medical statistics invoked by the coryphei of all the sects, as the supreme criterion of therapeutic methods. Now statistics is pure Empiricism ; it is the negation of all preconceived theory. The mathematicians have never invoked this mode of demonstration for their theorems, because by reasoning they make them evident; but in therapeutics, where the evidence of reason does not exist, one is obliged to have recourse to statistics to judge what is the best mode of treatment applicable to such or such a morbid species. The most determined adversaries of the employment of calculation in Medicine, agree however, that it is legitimate and even necessary, in order to obtain a judgment on therapeutical methods; they insist, solely, on the numerous sources of error, and the extreme difficulty of its application.*

Yes, Empiricism, under whatever aspect it is viewed, is excessively difficult, we may say even the most difficult of all the systems of Medicine, in its rational application, which will be made clear by the development which we shall presently give it. Whence it results that far from favoring idleness and ignorance, as some have believed, and others have feigned to believe, it requires, on the contrary, the most extended acquirements and most constant attention. It is, for the most part, to avoid the difficulties which it presents, that a crowd of other systems

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* F. J. Double who exhibits so well these difficulties and causes of error, does not deny that statistics is definitively the best and even the sole means to judge the relative value of different modes of treatment used against such and such diseases. See his work *Traité de Med. Pratique*, of J. P. Frank, translated into French by Gonderau. Paris, 1842.—In fine, I would formulate aphoristically my opinion on this subject. I would not say with a cotemporaneous author: Non solùm numerandæ, sed etiam perpendendœ sunt observations ; but I would say: Primùm perpendendæ sunt observationes, deinde perpendendæ et iterùm perpendendæ: demùm numerandæ.

have been imagined, and by turn abandoned, then resumed again with certain modifications, to be abandoned anew as false and insufficient. The Empirical doctrine, alone, has never varied in its fundamental dogmas: it has marked, from its origin, the true limits to which the mind can attain: it has traced the route which it must follow in the physical sciences. It is the most comprehensive of all medical doctrines, for it embraces every case in the practice; it makes use of notions suggested by anatomy, physiology, chemistry, physics, the various departments of pathology, etc., more largely and more surely than any other doctrine—as any one may be convinced by reading the following chapter.

## CHAPTER XI.

### EMPIRI-METHODISM; OR THE ALLIANCE OF EMPIRICISM WITH THE PHILOSOPHIC METHOD.

There is an axiom which reigns over the philosophy of causalities, which presides over all the determinations of the human will, whether with or without our apprehension, to which we give our assent willingly or not, as to a mathematical truth. It is the following: *The same cause, acting under identical circumstances, produces, always, the same effect.* If, in order to make an application of this axiom to Medicine, we attempt to translate it into therapeutic language, it is presented in the following proposition, which I have before announced: *A treatment which has procured the cure of any disease whatever, will cure, also, all diseases identical, or rather homogeneous to the first.*

I have demonstrated that the physicians of primitive times had no other therapeutic rule, and that they followed it either from instinct, or were led to adopt it by their reason; and I have cited, among other proofs, the established custom among several nations of antiquity, to expose the sick in front of their houses, so as to attract the attention of those who passed by, that they might suggest the remedies which they had seen successfully employed in similar cases. I have also shown that the application of this rule, the only one in therapeutics which has an absolute generality, offers extreme difficulties, which has led to the creation, successively, of the several branches of medical science, their numerous ramifications and infinite details.* I now resume the subject

* See remarks at close of Mystic Period.

and deduce from it, by a series of evident propositions, all the developements of the Empirical doctrine.

I pray the reader, in the onset, to observe carefully that the application of our fundamental axiom in therapeutic rests on three rigorous conditions, namely: *homogeneousness of diseases, identity of curative means, and the knowledge of a treatment applicable to each morbid species.* Now to attain, if not absolutely, which is impossible, but proximately, these three conditions, all the resources of science are indispensable, as we now proceed to show.

FIRST CONDITION—HOMOGENEOUSNESS OF DISEASES.

No practitioner has ever encountered two morbid states absolutely identical, and nature, perhaps, does never produce such. It is necessary, then, for the practitioner to content himself, from this circumstance, with a more or less accurate approximation. But at what degree of approximation dare the physician rest, or, in other terms, by what signs shall he recognise that there is enough resemblance between two diseases, one of which is before him and the other has been previously observed, in order to treat the case in hand with the same remedies employed in the former. In the beginning, they were contented with a very superficial similitude; it sufficed that a patient present one or two symptoms similar to those of another, to whom the same treatment had been applied. It is, thus, under this gross resemblance, that ordinary men dare, every day, advise the use of a crowd of remedies, and criticise very often, even, those that a physician has ordered. But men habituated to the observation of diseases, cannot hesitate to see how much this manner of judging is false and dangerous; consequently they endeavor to establish with more precision the distinctive characteristics of the morbid species.

At first it was thought, and not without reason, that two diseases approach so much nearer identity as they present the greatest number of similar phenomena. Consequently, those only were considered homogeneous which offered a multitude of analogous symptoms; while, on the other hand, it required but few differences to consider two affections as heterogeneous. This method, very simple and sure in appearance, did not, however, produce excellent results; the physicians of Cnidus had adopted it, and were led as Hippocrates said reproachfully, to multiply the morbid species beyond measure. Their pathology was confused and their therapeutics uncertain.

It will be understood that it does not suffice to enumerate the symptoms of disease to obtain an exact tableau; but that it is necessary to make a choice in order to bring into the first sketch, in imitation of

painters, the most characteristic traits, that is to say, the greatest phenomena; secondly, to lay down the less important symptoms and keep back, or neglect even entirely, the slight ones, or those without apparent value; such was the method of which Hippocrates offers the first model in his Epidemic Histories.

This manner of describing diseases was preferable to that of the Cnideans; it prevailed universally. From that time all the difficulty, or at least the greatest difficulty in nosography consisted in the choice of symptoms, in the classification of morbid phenomena. Which among these phenomena are those that should be considered in the first, second, and third rank, and so on for the rest? Which those that should be neglected? Such was the great problem that the Hippocratic method proposed for solution: up to that time science had marched slowly, noiselessly, and with centenary steps. But at this epoch the philosophers having taken possession of the mind, disputed, boisterously, for the sceptre of the intellectual empire; they divided themselves into rival sects, each of which pretended to explain the enigma of the universe, and pronounced definitely on the true method of interpreting the phenomena of nature. Physicians, also, after the example of philosophers in order to give the explanation of the phenomena of the animal economy—went back to the sources of life, to determine the proximate cause, the principle of the phenomena of morbid affections, and deduce from them an invariable method of treatment. They also wished to make science complete.

Nevertheless, observation does reveal to us neither the primitive causes nor principles of phenomena; it shows everywhere a circular connection of phenomena, which are all, by turns, both effects and causes; but it nowhere exhibits the first link. Nature, as had said Baglivi, and before him Hippocrates, and many others—nature is a circle, of which the eye of man can discover neither the beginning nor the end. Therefore, the research for this beginning or the end, is a vain and superfluous undertaking, in which it is unreasonable to persist. This is the place to say with Meibomius and Werlhof: "Seek not to know what the Supreme Master has been willing to conceal; it is but learned ignorance." But most of the philosophers and physicians did not possess this wise resignation. The physicians, for example, not being able to determine by direct observation, the proximate cause or the initial phenomenon of diseases, abandoned, like the philosophers, the route of pure experience, and flattered themselves with being able to resolve the great problem which they pursued by the aid of speculative considerations. They were ignorant at that time, that in regard to physics the human intelligence

can never surpass the limited horizon of the senses; that beyond this horizon, there exists nothing but fiction and hypothesis.

It required no less than two thousand years for the human mind to be convinced of this truth, and to consent to restrain itself within the limits which the Sovereign Creator has imposed to it; limits which humilitate its pride, and put a rein on its ambition for knowledge. It is only after having essayed by all imaginable hypotheses, and after rambling in every possible direction, that philosophers and physicians have returned to their true sphere, that is to say, that they have recognized that the intelligence should not and is not able to pass the sensations, in things of the material order. But young, inexperienced, and enthusiastic imaginations, are always ready to clear this circle, which seems to them too narrow, in order to wander in the fields of infinity, as if it was not enough to leave to this faculty (imagination), which we call *folle du logis*, the sovereign reign over arts of amusement and the caprices of fashion, but that it should not be permitted to usurp the place of good sense and experience, in the search of means proper to solace pain and preserve health. What errors has it not accredited in pathology! Not to recall the principal and most recent ones, have we not had diseases of the archeus, or the soul, or vital principal; those proceeding from an excess of effervessence in the blood, or an acid or alkaline acridness; those consisting in an obstruction of the capillary vessels, or a deformity of the liquid molecules? Has it not been pretended that all the morbid species, however numerous or various they appear, may be reduced to an excess or want of incitation? Is it not possible, lastly, that ulterior discoveries in the composition of the liquids or properties of the solids, will yet give rise to other hypotheses on the essence of diseases?

But while a crowd of theorists gave themselves up to the pursuit of that chimera called, sometimes, proximate cause, sometimes, essence, again, principle of morbid phenomena, and did nothing more, really, than pass from one fiction to another, practitioners, guided by simple good sense, and grounded in experience, limited themselves to describe the apparent symptoms, with the evident causes of each morbid affection, and established on these sensible characteristics the distinction of species and nosologic genera. Such was the course followed, not without deviation, by the most celebrated nosographers of antiquity and modern times; a course which Torti, Werlhof, and Lieutaud endeavored to re-establish in all its purity, following in this the track of Philinus, Sérapion, and other famous Empirics of the school of Alexandria. These, as should be remembered, did not make the homogeneousness of diseases consist in the ideal conformity of unique phenomena, placed beyond the reach

of the senses, and called proximate cause, essense, intimate nature, primitive phenomena, etc., but on an evident conformity, that is to say, in the uniform concurrence of the greatest number possible of sensible circumstances, anterior circumstances, concomitant symptoms, and consecutive phenomena. They demanded that nothing of all this should be neglected—nothing which had been or might become an object of observation—because for them the totality of all these things constituted the true essence of diseases.

However, it is impossible, as we have already said, in the examination or the description of a morbid state, that an account be made of all the circumstances, for in that case we should fall into the confusion with which Hippocrates reproached the Cnidians. Nosography would then no longer offer a methodic succession of more or less faithful and recognizable pictures, but an irregular assemblage of colors and traits, drawn at hazard on the canvas, leaving no more trace in the memory than the clouds which traverse the foggy sky of our climate, during the variable weather of spring and autumn. The homœopathic pathology is an incomparable model of this kind ; the obscurity, chaos and extravagance of Paracelsus have been surpassed very far by Samuel Hahnemann, which, however, has not prevented the inventor of the *spiritualized powder of gold* from finding, in our age, advocates and enthusiasts, just as the fabricator of *potable gold* found such in his. But let us leave, now, these souvenirs, which are already ancient history for our forgetful epoch, and see after what rules we may judge the importance and gravity of a morbid accident, setting aside all ideas of the vital principle and primitive or exclusively essential phenomena.

The ancient Empirics estimated the value of a symptom, or pathological circumstance, according to various considerations. Sometimes they had regard to the character and intensity of the symptom ; thus, a permanent delirium appeared to them more grave than a passing one ; a pain which nothing could assuage, seemed to them more unpromising than one which could be easily calmed by some sedative. Sometimes they had regard to the importance of the organs whose functions were deranged ; thus, difficult respiration appeared to merit more attention than a difficulty in the movement of the arm ; a rheumatism of the head more than one of the foot, things being otherwise equal. Sometimes they took into consideration the occasional or determining cause of a disease, when the specific influence of this cause had been an object of observation ; if, for example, they had to treat a person bitten by a serpent, they believed it very necessary to ascertain whether the reptile was of the venemous species, or not, because experience had demonstrated that this circumstance affected very greatly a wound of

this kind. In short, they were persuaded that the value of a symptom could vary from one stage to another, as the result of the increase of knowledge, and change of views. The history of medicine offers several very remarkable examples of this kind of variation, of which I shall cite only the following: before the discovery of cinchona, and even for a long time afterward, periodicity had attracted the attention of observers in fevers only, because in these it is extremely well marked. Nevertheless, very little account was made of it, even in them, because this circumstance was not the source of any special curative indication. Thus, Pinel has not separated, in his classification, intermittent from continued fevers, because he regarded periodicity as a secondary symptom, which does not change the nature of the disease! Where is, to day, the pathologist who does not arrange, in a separate classification, periodic affections.*

The following were, at the end of our Reform Period, the principal characters which constituted the nature of a disease, and according to which one morbid species was distinguished from another, by taking account only of the phenomena appreciable by the senses: first, the anterior circumstances, which comprise the predisposition, or diathesis, and the determining or occasional causes. such as contagion, miasmatic

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* Pinel would not have committed this philosophic heresy, if he had been imbued with the spirit of our fifth aphorism, an extract from the doctrine of Locke and Condillac: "Sensible objects being known to us only by the impressions they make upon our senses, our minds can perceive nothing in these objects beyond the sensations they excite in us. Thus, when any one asks what is the nature or essence of a body, we can only reply by announcing its sensible qualities." According to this axiom, if we are asked what is the nature or essence of a disease, we can only reply by announcing its known symptoms. How, then could it be said that a symptom as important as periodicity, a symptom which is the source of an entirely special kind of medication, does not belong to the nature of the disease?

Thus, also, a few years ago, but little attention was paid to the quality of the blood, in diseases, or at least no one drew from it a curative indication; while now, these qualities, being better studied, furnish precious signs for the diagnosis of several very remarkable pathological states—states that are designated, in the most recent writings, by the words hyperæmia, polyæmia, hypæmia, anæmia, hydræmia, which were formerly designated by the terms sanguineous plethora, chlorosis, poverty of the blood, etc. (See *Essai d'Hématologie Pathologique*, of M. Professor Andral, and the *Traité de Nosographie Médicale*, of M. Professor Bouillaud, in the chapter entitled, *Appendice aux deux Premières Classes des Maladies.*) Among learned men of France, and other countries, whose researches have contributed greatly to clear up the pathology and physiology of the blood, we must mention Prévost and Dumas, Berzélius, Denis, Scudamore, Schultz, Nasse, Huenefeld, Lecanu, Gavarret and Delafond collaborators with Andral, Donné, Becquerel, and Rodier.

or poisonous infection, etc.; second, the anatomical seat of the disease, or the designation of the organ or the tissue principally affected, and sometimes, but rarely, the indication of a vitiated state of the humors; third, the mode and degree of alteration of these organs in the living; fourth, the idiopathic and sympathetic functional troubles, their regular or irregular, continued or intermittent course; fifth, lastly, the anatomical lesions, found in those who had succumbed to diseases of the same species.

We see by this summary enumeration of circumstances, what this Empiri-Methodic, or Empirico-Rational doctrine takes into consideration in the classification of diseases; we see, I say, that far from neglecting, as has been pretended, the light of anatomy, physiology, pathological anatomy, and other necessary sciences furnished to pathology, it makes, on the contrary, a continual and very appropriate use of these lights, only taking from anatomy the researches on the elementary fiber, and primitive elements of bodies; from physiology, speculations on the vital principle, proximate cause, and the initial phenomena of life; in a word, rejecting from each science, whose aid it invoked, only the assertions which are not sufficiently justified by the testimony of the senses.

According to Empirico-Rational doctrine, the essence of disease consists in the totality of their known phenomena: two diseases are considered homogeneous, in other words, of the same species, and require the same treatment, when they present a great similitude in the whole of their appreciable symptoms. Thus, the nature or essence of inflammation consists, according to this doctrine, in the union, in the same locality, of these four symptoms: heat, pain, redness, and swelling; it being understood that these four symptoms constitute only one phase of the disease, which may present other symptoms at other stages of its existence. The Dogmatists, on the contrary, to whatever sect they belong, whether they are Galenists, Iatro-chemists, Animists, Iatro-mechanicians, Dynamists, etc., the Dogmatists, I say, make the essence of disease consist in a primitive force, proximate cause, or initial phenomenon, from which they imagine all these consecutive accidents, all these apparent forms to proceed. The essence of inflammation consists, according to the Iatro-chemist, in the acid or alkaline acridness, which irritates the affected part; according to the Animist, in the reaction of the vital principle against the morbiginous cause; with the Iatro-mechanician, in the obstruction of the vessels; with the Dynamist, in the reaction of the organic fiber against an irritant principle, or mechanical obstacle.

We can comprehend by this presentation of views, why the Empirical nosology always appeared superficial and changeable: superficial, because it stopped at simple appearances, or at sensations; changeable because,

embracing but known phenomena, it must change as they increase. While the Dogmatic nosology, in whatever form of dogmatism it is studied, has always seemed to be more profound, because it surpassed, by reasoning, the limits of the sensations, and more stable, because, as it pretended to go back to the initial force, or phenomenon, there seemed to be nothing more essential to seek after. But the apparent superficiality of Empiricism was wisdom, *erudita inscitia*—the specious profundity of Dogmatism, an illusion, an optical error. The mobility of Empiricism has been, also, in reality, much less great, much less striking, than that of Dogmatism; for the Empirical nosography has varied only in details, while the Dogmatic nosography, on the contrary, has been overthrown, from age to age, in its very foundations.*

SECOND CONDITION—IDENTITY OF CURATIVE MEANS.

This condition, though in general less difficult to fulfil than the first, still presents in certain cases grave difficulties: first, because its accomplishment does not depend alone on the skill of the physician, but on the docility of the patient, or the exactness and fidelity of the persons who concur in any manner whatever in the execution of the treatment: second, because it is not always possible to place the patient in the same favorable hygienic condition. Notwithstanding these obstacles, art is here much more powerful, and it is enabled to obtain, in the most of cases, a sufficient approximation. Nevertheless, to attain this result, it is necessary that the man of art possess sufficiently extended notions on natural history, physics, chemistry, materia medica and pharmacology.

Thus, the more we advance in the development of the Empiri-methodic doctrine, the more we are convinced that the rational application of

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* We can represent the general idea that physicians have had of disease, by an algebraic formula, in the following manner: Let A represent the sum of acquired notions on any disease by direct observation; let E represent the proximate cause, or the primitive phenomenon, which, according to the Dogmatists, constitutes the morbid *essence*—a sort of germ, whose successive evolutions are supposed to give rise to all the apparent phenomena.

For the Dogmatists of any epoch or sect, the idea of the disease, M, is composed of the sum, A, of the notions furnished by the senses, plus the essential phenomenon, E, which the mind should perceive by the aid of reasoning. The general pathological formula of this doctrine will be, then, M, the idea of the disease, equals A, the sum of the notions furnished by the senses, plus E, the essential phenomenon or essence:

$$M = A + E$$

For the Empirics of all times, the general idea of the disease, M, is composed of the sum, A, of the notions obtained by direct observation, which sum is the same for the Empirics and the enlightened Dogmatists of the same epoch, plus

this doctrine requires extremely varied knowledge, constant attention and great perspicacity.

THIRD CONDITION—KNOWLEDGE OF A TREATMENT APPLICABLE TO EACH SPECIES OF DISEASE.

It does not suffice to discern one morbid species from another, nor to have at our disposal excellent remedies: it is necessary still, and it is in this that practical skill consists, to know how to use them appropriately. It is not so much the remedy that procures the cure, as the opportunity of its application. This last condition is the supreme end of Medicine—the crowning glory of the Art. To arrive at the knowledge of curative indications, or the opportunity of such or such a mode of treatment, is the principal object of all therapeutical researches. Now it must be avowed that the fundamental axiom of Empiricism does not furnish any light to direct us in such researches; it does not at all indicate the route to follow for the discovery of curative means; it presupposes a knowledge of these means, and limits itself to tracing the manner of their application. Administer in each case, say the Empirics, the remedies that have best succeeded in analagous cases. Those philosophic physicians who were not willing to be guided by anything else than rational experience, could not have contented themselves with an axiom so vague; they must have felt the necessity of adding to this axiom some rules proper to direct

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the essential phenomenon, or proximate cause, which the Empirics regard as inacessible to the penetration of man, and which consequently is, in their eyes, an unknown quantity, X. We shall have, then, for the general pathological formula of this doctrine, M, or the idea of the disease, equals A, the sum of the notions furnished by the senses, plus X, the essential phenomenon:

$$M=A+X$$

These two formula differ only in the value of E, which the Dogmatists professed to know; but which the Empirics considered as inaccessible to the understand ing, as well as to the senses. Now, up to this time, the Dogmatists have not been able to agree among themselves on the value of the essential or primordial phenomenon, which they suppose that they understand. Moreover, it is evident that they will never know its value, if we can put some confidence in the following great axiom of modern philosophy: *Reason has been given to man only to guide experience; and the mind, in wishing to surpass the limits of sensations in physical things, mistakes its rights as well as its powers.*

We conclude from the above that the pathological formula of Empiricism, though in appearance less complete and less profound than that of the Dogmatists, is, in reality, and always will be, truer and more exact. I do not say with Condillac, that the rendering of our reasoning into algebraic language gives to it more certainty, but I say, simply, that it must appear clearer and more precise in the eyes of those to whom this language is familiar.

them in experimentation with remedies. History teaches us that they traced, indeed, very wise rules in this respect. But before exhibiting these rules, let us examine, somewhat, the value of the axiom in itself.

This axiom has been the object of the most bitter criticism on the part of the most renowned philosophers and theorists of antiquity, and of the middle ages. They charge it not with falsity or error—that were impossible—but with stupidity. In their view, to use a remedy for the sole motive that it had cured in analagous cases, was to act *without reason.* It was necessary, according to them, to be able to say, also, by what property—by what concealed virtue this remedy cured. For myself, I am transported with admiration and astonishment when I consider with what precision the coryphie of antique Empiricism have marked the limits where our minds must pause in researches touching the action of remedies. They were in advance, by two thousand years, of the discoveries of modern philosophy. It was too great a diplay of genius: their cotemporaries were not able to comprehend them, therefore they calumniated them. The Dogmatists and Methodists are not obnoxious, on the other hand, to the reproaches that have been made to the Empirics; they have attempted to explain the intimate action of remedies, and they have fallen in this respect into such ridiculous aberrations that their pretentious babbling has been compared to the filthy condition of the Augean stables. Let us see how one of the most famous of modern theorists, Bichat, has depicted the obscurity, disorder, and incoherence of the therapeutical language of the schools: "Into what errors he says, "are we not drawn in the employment and the denomination of medicaments? Deobstruents were created when the theory of obstruction was in vogue. Incisives sprung up when the viscidity of the humors was held; the expressions of dilutants and attenuants, when the ideas attached to these terms were put forward, at the same epoch. When it was necessary to obtund the acrids, inviscants or incrassants were created, etc. Those who saw in diseases nothing but the relaxation and tension of the fibers—the *laxum* and *strictum*, as they called it—employed astringents and relaxants. The cooling and the heating remedies were employed, especially by those who had particular regard, in diseases, to the excess or want of caloric, etc.

"Identical means have had, often, different names, following the manner in which it was supposed they acted. Deobstruents with one, relaxants with another, refrigerants with a third. The same medica ment has been by turns employed with different, and even opposite views; so true is it, that the mind of man prodeeds at hazard, when he is led by vague opinions. * * * Except the medicaments whose

effects are established by *strict observation*, as evacuants, diuretics, sialagogues, antispasmodics, etc., those consequently that act on a specific function, and what is our knowledge of the rest?"*

Into what strange ramblings the desire to explain the intimate action of remedies led ancient medicine! But what the genius of Bichat did not perceive (doubtless because a sufficiently long experience had not ripened it) is, that all these ramblings have for a principle and final resumé, the axiom of therapeutics generally admitted still in his time: diseases are cured by their contraries, *contraria contrariis curantur.* From the moment, indeed, that this axiom was admitted, it became indispensable to determine the mode of action of the morbific cause, and the mode of action of the remedy, in order to establish the pretended antagonism that was supposed to exist between these two powers—forces.

I have demonstrated elsewhere, in a peremptory manner, the falsity of such a maxim, and the impossibility of its application. Henceforth this is a fact, accepted in science, to which I think it unneccessary to recur. But we have seen set up, in our day, another axiom which aspired to take its place, the falsity of which is still more evident—more palpable. Indeed, all the arguments which we have employed against the rule of *contraries*, are equally applicable to the doctrine of *similars*—of which mention is made in the Hippocratic works, and which a German physician has attempted to generalize. This physician, having recognized by experience, as attentive and unprejudiced observers have done at all times, the error of the axiom which says that diseases are cured by their contraries, imagined, that in order to be right, he had only to take the opposite of this maxim. Consequently, he proclaimed that the supreme law of all cures was this: diseases are cured by their *similars.* A small number of particular facts, badly observed and badly interpreted, appeared to him as a beginning of demonstration. There needed nothing more to excite his enthusiasm, and lead him to undertake researches and experiments, followed with admirable patience, worthy of a better cause.

Nevertheless, it was impossible that experiments made in good faith should not have demonstrated to a sensible mind the falsity of the law of similars. Such appears to have been, in fact, the result of the first homœopathic experiments. But the author held on to his pretended discovery like a sovereign holds on to his crown, a poet to his verses, a miser to his treasure. He speaks of it with religious admiration; he puts the rule of similars above all ancient and modern discoveries; he

* Anatomie Générale, Considerations Generales.

regards himself already as the object of grateful veneration by posterity. When such an illusion has once entered into the head of a man, it is very rare for it to leave it. Rather than renounce it, such a man will shut his eyes to all evidence; he will even become a martyr, if necessary.

Hahnemann, who appeals unceasingly to pure experience when he wishes to convince us of the falsity of the axiom of contraries,—this same Hahnemann, rejects the proofs of experience, or what amounts to the same, he annuls it, when the effects of his doctrine are in question; for, is it not annulling observation, to apply it to objects inappreciable to the senses. Where is the man who can verify the observations of a homœopath? When Hahnemann assures us, for example, that the quadrillionth of a grain of the powder of gold, mixed with one hundred grains of an inert powder, has sufficed, after being triturated several moments, to calm at once the furors of a maniac, who can assure himself whether it is true or not*? No one. Would you reiterate the experiment of the apostle of homœopathy? If you obtain a different result, as must be the case, he will respond to you, that you have not employed the exact dose of a quadrillionth of a grain. How will you prove that there is just a quadrillionth of a grain of the powder of gold mixed with a hundred grains of the powder of sugar, in the flask that you have made him smell? That is an impossibility.

It is, then, physically impossible, as I have just said, to verify the exactness of a homœopathic experiment. This truth has been confirmed in proper terms by Hahnemann himself. It is difficult, he says, to comply with the request that many persons have made to me, to place before the eyes of the public some examples of homœopathic cures; if we should do so, the mere reading of them would be of very little utility.†

Hahnemann has been charged with empiricism; but nothing is less founded than this qualification; for he entertains us unceasingly on the intimate nature of diseases—the atomic or spiritual action of remedies. He shows the medicamental atoms attaching themselves by election, to the molecules of the diseased part. In a word, he transports us continually beyond the phenomena which are appreciable by the senses; that is to say, into the region of chimeras. This is clearly pure Dogmatism, but a dogmatism which differs from the ancient one, as the homœopath attributes to the similitude of action of the disease and the remedy, the curative result which the others attributed to their antagonism. What deceives superficial readers, and leads them to believe that

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*See the Traité de Matiere Medicale ou de l'Action pure des Medicaments Homœopathiques, by S. Hahnemann, Paris, 1834. Vol. I, p. 79.

† Ibid.

homœopathy is related to empiricism, is the eulogy that Hahnemann ceases not to bestow upon pure experiment; for he continually alludes to it. But this appeal is only formal. We know now how little importance he attaches to the decisions of experience, and how hard he tried to annihilate them.

If there should remain still a shadow of doubt in the minds of my readers concerning the falsity and the nullity, whether of the axiom of contraries or the axiom of similars, it will suffice to convince them irresistibly, by reminding them of this sentence of Hume, which I have already quoted after Barthez, and upon which all the philosophers now agree: "It does not appear that any corporeal action, nor any action of the soul upon its own faculties or ideas, can enable us to conceive the acting force of causes, or the necessary relation which they sustain to their effects. In the succession of natural phenomena, nothing presents to us the idea of causality, or the connection of cause and effect. But when the succession of one phenomenon to another is constant, the human mind, which observes this assiduously, and which often even can foresee it, is led to believe that these phenomena succeed each other because they are linked together."

Thus, then, when the employment of a therapeutical agent is followed constantly, or very frequently, by the cure of a given disease, we are led to believe that the treatment employed is the cause of the cure; but our mind cannot seize the bond which unites these two facts together. It cannot, therefore, affirm that the cure has taken place in virtue of the similarity or antagonism of the curative and the morbigenous principle; or in virtue of any other appreciable connection between the remedy and the disease. All that we can know certainly—all that assiduous observation can teach us, is, that the cure of such a disease succeeds more or less constantly, the administration of such a remedy.

Besides, is not this the most important thing for us to know; and the best reason which can be given for the employment of a therapeutical agent? Have we not, in this, certainty, or, at least, very great probability that it will cure? In truth, the theorists who ask more than this, are very exacting, and somewhat unreasonable; and Empirics, both ancient and modern, have done well not to seek any farther in what consists the curative virtue of remedies, but to concern themselves, with all possible care, if a remedy cures often, or seldom, or never—in what circumstances it cures, and in what it does not cure. They have marked the veritable limit which our mind can attain, and where it must stop in therapeutics, as well as in pathology. They foresaw, as I have said above, the discoveries of modern philosophy, and thus pronounced in advance, a condemnation of such strange expressions as

homœopathy, antipathy, allopathy—expressions as opposite to the genius of good medicine as sound etymology.

According to the doctrine of Empiricism, no one should inquire why opium causes sleep, nor why cinchona breaks a fever, but it should be ascertained if it is really true that opium produces sleep—if it constantly has this effect—in what state of health it procures sleep, and in what doses it is to be administered to cause this result. It should be ascertained if cinchona really breaks a fever—the kind of fever it thus cures, and in what doses it is a febrifuge. If the authors in Medicine were only occupied with questions of this kind, the only ones which are effectually useful, the sole ones susceptible of a rational solution, they would not be lead away into a labyrinth of learned interpretations, which have become very ridiculous; they would not have furnished so many available points for the humor of our great Comic; they would not have opposed their sottish theoretic prejudices to the admission of the most efficacious remedies, such as cinchona, mercury, vaccination, etc. For the doctrine of Empiricism does not exclude in an absolute manner, any curative proceedure—it repels only the means recognized as inefficacious, and postpones the admission of those whose efficacy appears doubtful or contestable. To the Empiri-methodic physician all means that cure are rational, and those which cure the best are most so. He would not reject even the globules, more or less infinitessimal, of Homœopathy, nor the manipulations of the magnetiser, if it could be shown by observations worthy of faith, that these globules or these passes cured frequently enough any given class of diseases.

The Empirics, trusting to experience only in the appreciation of the value of remedies (and, as we have just seen, there exists in therapeutics no more rational means of appreciating them), they were obliged to devote themselves, with greatest care, to the perfection of this means. And this is what they did, indeed, as we have reported in the Anatomical Period, when exhibiting their antique doctrine. The following is a resumé of the rules which they drew up on this subject: The same medicament must have been tried a great number of times in perfectly analogous cases, by different persons, capable of discovering the homogeneousness of morbid affections, and who were worthy of confidence. When a treatment had offered these proofs, and was found to be constantly efficacious, then the description of the treatment, and the disease to which applied, formed a *theorem*. The collection of these theorems thus verified, constituted the Healing Art, and he only possessed Empiricism who kept faithfully in his memory the totality of its theorems.

For two thousand years these rules have existed, and no notable change has been made in them, up to the epoch when Barthez proposed his famous classification of curative methods. This classification, it must be confessed, penetrated much farther than had been done before into the mechanism of the operations of the mind in therapeutics; but it was neither complete nor free from error, as I have before shown. Barthez only had a glimpse of the truth—but he did not seize nor make himself master of it; he let it escape almost immediately, because he was misled by a false theory. By modifying his therapeutic classification, as I have already done, he had rendered it nearly irreproachable for the epoch when it appeared. This classification, modified in that way, is still, to-day, if I am not mistaken, the best one that has been proposed on this subject. It enters, perfectly, into the Empirico-rational doctrine; it is the direct consequence, the natural developement of the therapeutic axiom of this doctrine—for this reason it must find its place here.

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### ON METHOD IN THERAPEUTICS; OR CLASSIFICATION OF THE GENERAL MODES OF TREATMENT.

There are, in the present state of science, four general modes of treatment, namely: the synthetic, analytic, expectant, and explorative or perturbative.

#### SYNTHETIC MODE.

In this mode the mind looks at all the phenomena of a disease, as forming an indivisible concourse of symptoms—a single morbid entity—and it directs against this entity, considered thus *én masse*, a medication termed specific. This mode of treatment, when it is administered *apropos*, is the most efficacious—the most benefical of all. But science, unfortunately, possesses very few well established specifics, such as vaccine, mercury, and cinchona, which can be opposed to a determined class of diseases. It possesses a greater number of specifics for the functions, such as various eccropotics, sialagogues, diuretics, emenagogues, etc., which, without being endowed with a specificity as admirable as the preceding nevertheless render important service in Medicine when they are employed with discernment, an indispensable condition, after all, for every species of medication.

The synthetic mode is not only the most efficacious of the modes of treatment, but is also the most natural, the one to which we are most instinctively led. In the first periods of the history of Medicine, none

but specific medicaments, or those held as such, were employed. As soon as a substance or a medical preparation appeared useful in a disease, it was designated by a name which recalled these properties; hence were derived the denominations, vulnerary, scabious, pulmonary therica, etc. However, more attentive and enlightened observation not having confirmed eventually the correctness of these denominations, all confidence was gradually lost in them, and by an exaggeration very natural, the curative method to which it had given rise was included in the same proscription. The treatment by specifics was banished from science, in favor of a false theory, which pronounced the former irrational; but it could not be equally excluded from practice, because, in reality, it was the most efficacious and the most natural. It is time, then, that we restore it by means of a better theory to the honorable rank to which it is entitled, from the services which art and humanity receive daily at its hands.

### ANALYTICAL MODE.

This mode of treatment is the only one which has been well described and well denominated by Barthez. It consists in decomposing a disease or concourse of symptoms into its elements, that is to say, into several secondary groups, to each of which an appropriate treatment is applied, either simultaneously or successively. For example, in convulsive bronchitis or whooping cough, one may combat the sanguineous congestion, if it is marked, by an application of leeches; the mucous congestion, by mild emeto-cathartics in broken doses; finally, the nervous element may be attacked by means of some narcotic like belladonna, digitalis, or opium.

This manner of treating diseases is much less sure than the preceding, and recourse is had to it only in affections for which there is no known specific remedy. It is, moreover, of more difficult application, because it requires, on the part of the practitioner, one operation more than the former, viz: the analysis of the symptoms of a disease, which operation presents sometimes serious difficulties, and countenances always arbitrariness. Thus, in the example referred to, it may happen that one physician gives priority to the sanguineous element, another to the serous, a third to the nervous. Owing to the fact that the analysis of the morbid concourse is merely mental, it is ordinarily very difficult to decide which of these elements has over the others a preponderating influence. Under these circumstances, the practitioner too often suffers himself to be guided in his choice by preconceived ideas, and the prejudices of systems. The Animist, for example, sees in every thing a derangement of the soul, or vital principle, and nothing else;

the Chemist perceives nothing but the predominance of some acridness; the Mechanician, a mechanical obstacle to the circulation of the fluids; and the Vitalist, some changes in the vital forces. It results from this, that analysis is not only of difficult application in therapeutics, but also that it leads strongly toward arbitrariness, to hypotheses.*

EXPECTANT MODE.

When a disease has a fixed and rapid course, as an ephemeral fever, or benign roseola, a varioloid, a simple wound not involving any important part, etc.; when a disease, though graver, offers no alarming symptom, and seems to tend toward a happy termination by the simple forces of nature, as an inflammatory fever without any apparent phlegmasia of

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* We have frequently had occasion in the course of this history, to show that analysis is a falacious method, and has been the source of a crowd of errors in Medicine, when it is separated from synthesis. Permit me to add *en passant*, that the same method applied to morals, has given rise to errors a hundred times more grievous still. If we are not on our guard against the illusions with which it fills our minds, under the guise of exactness, truth, and profundity, it will soon dry up our hearts, and smother in our souls every germ of virtue, every impulse of courage, magnanimity, and devotion; to substitute for them coldness, arid egotism, melancholy, contempt for others and one's self. See in the romance of Alfred de Vigny, entitled: Cinq Mars, ou une Conjuration sous Louis XIII.; see Isay, the conversation of Friar Joseph, a man condemned by Richelieu, with Cinq Mars, detained in prison and awaiting execution, in vol. II, p. 352, of the fifth edition. Read from one end to the other the delightful creation of Xaintaine, entitled, *Pecciola*, of which the following is a fragment:

"A profound sadness took possession of the Count de Charney. Philosophic analysis, notwithstanding all his efforts to shake it off, reigned over his mind, controlled all his affections, tarnished, contracted, and extinguished the pleasures and luxuries in the midst of which he lived. The eulogies of his friends, the caresses of his mistresses, were no more to him than the current money with which they paid for the part they took of his fortune, and were only a testimony of their necessity to live at his expense. Decomposing and reducing every thing to its first elements, by this same spirit of analysis, he was attacked with a singular disease. In the tissue of the fine cloth of his dress, he thought he detected the odor of the animal which furnished the wool; on the silk of rich hangings, he thought he saw crawl the disgusting worm which had spun it; on his elegant furniture, his carpets, the bindings of his books, toys of pearl and ivory, he saw nothing but spoils of death—death set off in attractive colors by the sweat of poor artizans. Illusion was destroyed, and the imagination paralyzed."

Must we conclude from these abuses of analysis that we should proscribe this mode of acquisition, to which the human mind is indebted for so many discoveries? No, certainly not. Such is not our intention; we have presented the dangers and deceptions of analysis, in order that it may not be embraced with blind faith; just as the ancient Empirics assigned limits to reason, not to proscribe it, as they have been accused, but to prevent its abuse.

an organ; when a disease presents itself in an obscure manner, and there is besides nothing urgent in the case, and, in a multitude of other cases which it would take too long to specify, it suffices, in order to obtain a cure, to place the patient in favorable hygienic conditions, prevent the commission of any imprudence, and direct the use of a proper regimen.

Nature, in these cases, seems to take upon herself the work of medication; the physician has only to observe and hold himself in expectation, to repress, if need be, the deviations of medicating nature, to excite or moderate her movements, to sustain her forces, and to aid her, in a word, by following the indications which she furnishes. The practitioner has been compared, in such a case, sometimes to a servant or minister who waits for his actions, only the signal of the master; again, to an idle spectator; but it is evident that in this case the listlessness of the physician is only apparent, and the denomination of inactive medicine, employed to designate the treatment, appears to me improper.

The disease, or the concourse of symptoms is here considered as a regular chain of phenomena, which nature excites for a curative purpose, and it is important not to interfere with the spontaneous tendency without absolute necessity. This manner of philosophizing having been put in vogue by Hippocrates, those who adopted it were named Hippocratists, or Naturalists. It suited especially in the infancy of the Art, at an epoch when few or no true specifics were known, and when an enlightened use of analysis had not yet been made. It renders the practitioner circumspect and attentive, which must be to the advantage of the patient; and it is applicable in a multitude of cases, both acute and chronic.

But it is evident that the expectant method does not constitute all of the Healing Art: that the synthetic is much more prompt and sure whenever it can be employed, and that the analytic merits also in many cases the preference. Generalizing the Expectant method to excess, under the title of Hippocratic or Natural method, is to mistake the progress of light, and to chain the genius of Medicine to the bed of Procrustes.

### EXPLORING OR PERTURBATING MODE.

Ambiguous or doubtful cases often occur in practice, which our minds can not associate in a precise way to any of the known morbid species; then the physician prescribes often, not at hazard, but from choice, a medication calculated to develop the characters of the disease and clear up his diagnosis. His conduct, under these circumstances, may be

compared to that of the chemist who employs a re-agent to recognize the nature of a saline solution.

In other cases, unhappily too numerous, the man of Art, after having exhausted all the rational means which science has put at his disposal, without obtaining any satisfactory result, owing to some idiosyncracy, or other inexplicable circumstance, has recourse to an indirect treatment, by which he proposes to give a shock to the entire economy, or only to the part affected, in order to produce an advantageous and curative perturbation. Such was the object had in view by the ancient Methodists in inventing the metasyncritic circle; such is also now our aim when we order sea-bathing, voyages, mineral waters, hydropathy, etc. In these cases, the physician is not acting blindly, nor does he prescribe at hazard, but is guided by certain analogies; he has regard to the habitudes, age, and temperament of the patient. On this account, we give also to this mode of treatment the title of rational; we class it in the rank of therapeutic methods acknowledged by science. But it occupies the lowest rank among these methods, and the progress of knowledge will more and more restrain its application.

The explorative and the perturbative method, though united here, respond to two different views of our minds, and should have formed two separate paragraphs. I have thought it proper to unite them because they both constitute a sort of groping, and both also prove that there is in the mind of him who employs either, about the same degree of uncertainty and hesitation.

### REMARKS.

It often happens that in the same disease, we are obliged to employ several modes of treatment, or even all, either collectively or successively. Example: I attended, some twelve years ago, a man thirty-five years of age, small and fat, and of a somewhat sanguineous appearance, whose trade was shoemaking. The first time I saw him, he complained of a want of appetite without increase of thirst, a general debility and insurmountable sleepiness. His tongue, his excretions, alvine and urinary, his digestion, his pulse, his respiration and his cerebral functions presented nothing abnormal. I ordered some mustard foot-baths, a middle diet, a mild purgative and a promenade after meals. Three or four days passed by without any modification in the state of my patient being visible, unless there was a slight increase of the debility and sleepiness. I took from his arm eighteen to twenty ounces of blood, continued the foot-baths, the middle diet and mild cathartic every other day. At the end of some days there was no amelioration; on the

contrary, the debility had increased. I questioned him anew, and he told me among a mass of useless circumlocution, that his greatest drowsiness was about three o'clock in the day. I called to see him on the next day at that hour. He was in bed. His color was a little more than usual, but there was no frequency of the pulse or extraordinary heat of skin. When I shook him he opened his eyes, replied slowly but correctly to my questions, and fell off with sleep in an instant. I learned that the propensity to sleep came on every day between eleven and twelve o'clock, and ceased towards six or seven in the evening, and that it had never been preceded by shivering or followed by a sweat. I prescribed six grains of the sulphate of quinine to be taken in the evening, and a similar dose to be taken at nine in the morning. The next day the somnolency was much less urgent, and the prostration less sensible. The continuation of the remedy for several days prevented completely the return of the soporific accession and the debility.

If any one now wishes to analyze my conduct in the management of this case, he will discover three distinct periods. In the first I employed the expectant method. Then I decomposed the concourse of symptoms conformably to the analytic method, and I treated the symptom of cerebral congestion which appeared to me to be the most predominant. Finally, I considered the ensemble of the symptoms as a unit, and treated him according to the synthetic method.

If any one wishes to make the analysis in the same manner of any other treatment whatever, whether simple or complicated, medical or surgical, it is easy to see that each part of the treatment conforms to one of the general modes explained above. Suppose, for example, that it relates to an abdominal tumor, whose extirpation is judged to be possible. It is clear that in this case the synthetic method is first employed, for the disease is attacked *en masse*, as constituting a unit. Then the wound is closed by sticking plasters, a simple dressing applied, and the patient is directed to be kept quiet and on proper diet. This is the expectant division of the treatment; the case is left to nature. But during the course of the cicatrization, various accidents may be developed; an inflammatory fever, for example, may be lighted up. Then recourse is had to the analytic mode in attacking the sanguineous element by blood-letting, and by withdrawing a portion of the nutrition, which diminishes, of course, the mass of liquids, and by combatting the thirst and excess of caloric by abundant acidulated or mucilaginous drinks. If hospital gangrene supervene, it is treated by topical applications of acids or caustics, with a view to change an ulceration of a malignant

nature into a simple ulcer; in other words, use is made of the perturbative method, because no safer means is known yet to arrest this grievous complication.

Thus, however varied may be the means employed in therapeutics—however diverse may be the views of practitioners, it is evident that their views and their means are all related naturally to some one of the methods referred to in our category above given. Moreover, our therapeutic classification presents a regular gradation of the general modes of treatment, from the one which offers the least chances of success to the one whose success is nearly infallible. It indicates more clearly than has been done heretofore the end that science proposes, which consists in elevating the treatment of each disease to the most perfect and surest mode, that is to say, to the synthetic mode, contrary to the opinion of so many theorists, who falsified the art, and diverted the minds of practitioners from the true path by tarnishing with an opprobious epithet this curative method, which they believed to be injurious.

### CONCLUSION.

Finally, the Empiri-methodic or Empirico-rational system, whose economy we have just summarily unfolded, includes all branches of medical science and unites them by a natural tie, supported by reason and history. All, or nearly all the authors of systems of Medicine have sought their foundation in physiology, whence they deduced first their pathological theories, and lastly, their rules of treatment. This was, it must be avowed, following an inverse march to what nature and reason indicate. It is therefore not astonishing, however great was the intelligence of these authors, that they were led astray. Indeed, if we consult history, we see that the first medical researches related to therapeutics. Even before the existence of the Art, therapeutics was instinctively applied. If we interrogate reason, we find that therapeutics is the most important branch of medicine, the center to which should converge the luminous rays that emanate from the other branches of the science. It was, then, natural and reasonable to seek in therapeutics the true basis of a medical system. This is what was done so happily and perspicuously by the philosophic physicians of Alexandria, who were the first to take the name of Empirics. It is what I have also undertaken to bring about with the aid of the few remains of their doctrine, the lights of history and of those which modern philosophy and medical practice have furnished me. It has been seen how, from this axiom, so natural and so incontestible—*each disease must be treated by those remedies which have succeeded best in similar cases*—we have deduced the necessity of all the branches of pathology, anatomy, physiology, etc.

Would it be too much to affirm that the system Empiri-methodic is the only true and complete one which has been proposed in medicine? So many men of mind and genius have been shown in the course of this history to have been in error for having made a similar assertion in honor of other systems, it would be temerity in me to affirm it, whatever may be my convictions in this respect. I affirm nothing then, but I await with confidence the judgment of my *confreres*, and in particular that of the practitioners, to whom it appertains, at last, to pronounce on the value of all medical systems.

## CHAPTER XII.

### GENERAL RESUME.

The History of Medicine, considered in its totality from the commencement of society to the present epoch, offers us three principal phases, which we have designated by the names of Age of Foundation, Age of Transition and Age of Renovation.

During the first phase, which terminated at the death of Galen, toward the end of the second century of the Christian era, we have seen the Healing Art commence among all nations in nearly the same manner. We have recognized that it was not a pure invention of the genius of man, but that it owed its origin on one hand to the invincible instinct which leads us to fly from pain and seek means for its relief; on the other, to that inclination, eminently social, called sympathy, which impels us to succor our fellows in their sufferings.

The discovery of the earliest remedies was due to accident, instinct and experience. But as soon as a knowledge of a certain number of medicaments applicable to some determined diseases had been acquired, it became necessary to arrange this knowledge in an order which would render its application more easy and sure. From that time reason or philosophy united with experience to give perfection to the art. Thus instinct, accident and observation laid the first foundations of the scientific edifice, or rather furnished the first materials; reason came next, to polish, cull and arrange these materials in a suitable manner, and direct observation in the search for new facts.

Thus far, reason had marched in the rear of experience, or by its side, performing the offices of censor or architect; but it did not precede it, it did not pretend, especially, to create itself the material which should serve in the construction of the monument of Medicine. But philosophy soon allowed itself to creep upon the steps of observation,

which furnished it but too slowly, with vague, limited and very variable information. The philosophers abandoned the long and tortuous path of experience, believing they could reach their aim more speedily and directly on the wings of intelligence, free from the weight of the senses. The certainty and invariableness of mathematical propositions, the grandeur and beauty of the maxims in morals and natural religion, admirable discoveries, the foundation of all social order, which were regarded as the fruit of the pure perceptions of the mind—these were the motives, very excusable doubtless, on which they rested, to turn from observation, and seek by the aid of pure mental intuition, the laws which regulate physical phenomena.

From that time, physicians proposed nothing less than to determine the proximate cause, the principle, the essence of life and diseases, and the intimate action of remedies. They assumed to build upon this basis the scientific monument of Medicine. The more, then, objects appeared to them removed from the grasp of the senses, the more they judged them proper to become a solid foundation for science—one that would be undisturbed by the fluctuations of experience, a mode of acquisition which Hippocrates had qualified as uncertain, *experientia fallax*. Thence sprung up a crowd of hypotheses and systems, which struggled for supremacy in Medicine, from Hippocrates to Galen. Their founders flattered themselves to be able to avoid the uncertainty and gropings of experience, but they fell into a labyrinth of imaginary speculations, and opened an illimitable field to controversy. Physicians were divided, like the philosophers, into rival sects, whose disputes only ceased in consequence of political events, and social revolutions. It was during these conjunctures that the physician of Pergamos, having collected what he found best in the writings of his predecessors, composed from them a body of doctrine, conformed to the reigning philosophic ideas, in which we meet, in some degree, all the opinions that had been in vogue, but over all of which Hippocratic Dogmatism predominates.

The scientific monument of Medicine, thus constituted, traversed the Second Age without undergoing any notable change. The theories of Galen were authority during all this lapse of time; his successors aspired only to the glory of interpreting them, and to add some particular facts, some observations of detail, to the heritage that antiquity had left to them. There was established, we do not know at what epoch, a strange but salutary opinion, which formed a line of demarkation, a species of antagonism between theory and practice, between reason and experience. The theorist, it was said, must proceed according to logic, and the practitioner must be guided by observation. By means of this singular expedient or this fiction, false theories, and a

deceptive science, were preserved for centuries without misleading practice too much; the physician could reason badly, without much injury to his patient, and without depriving himself of the lights of experience.

Such is the aspect which medical doctrine presents at the commencement of the Age of Renovation, and even for a long time afterward. We have seen that at this epoch the human mind awoke from its long torpor, and signalized its revival by numerous discoveries and improvements. Astronomy, physics, chemistry, and natural history, underwent a complete revolution, for which they were indebted to the direct observation of phenomena, and the adoption of a logical method, formerly scarcely used, called *induction*. The mathematicians, who were never led astray in their abstract speculations, and who had made such beautiful discoveries, reasoning by *deduction*, preserved this logical method, always dearer to meditative minds than to observers.

The philosophers were divided into two classes—one, including Descartes, Leibnitz, Kant, and their disciples, considered, above all, the activity of the soul in the acquisition of knowledge, and the production of moral acts; they were called *spiritualists*, and remained faithful to the ancient form of reasoning, *deduction*, after freeing it from the pedantic dress of the schools. The other, including Bacon, Locke, Condillac, and their followers, rather regarded the soul as passive, and assumed that all its faculties, and all its acts, are derived from sensitive impressions; they were called, on this account, *sensitists*, and adopted, for their general method of reasoning, induction, which they strove to introduce into all the sciences. If I dare express an opinion on a subject so delicate, I would say that the first,—that is, the spiritualists—seem to me to have better demonstrated moral and intellectual truths, while the second, or the sensitists, appear to me to have traced with more exactness the phenomena of matter, either organic or inorganic, and to have better comprehended its laws.

However this may be, the greatest number of physicians adopted the sensitive philosophy. They all pretended to take the sensations, or the sensible phenomena, for the basis of their systems, but all, or nearly all, surpassed, in their theoretic speculations, the horizon of these phenomena, in which they violated that axiom of modern philosophy, common to Sensualism and Spiritualism—*reason has only been given to us to guide experience, and the mind, in attempting to pass the limits of the sensations, mistakes its right and its power.* Hence the chimeras and instability of recent medical theories; hence, also, the necessity of prolonging, indefinitely, the divorce of theory and practice, of reason and experience—a divorce which the greatest practitioners of the last centuries have often proclaimed—a divorce whose inconveniences Baglivi

was the first to signalize—which Werlhof, Morgagni, and Lieutaud, with a small number of other writers, attempted to break, but which will only completely cease when all physicians shall be penetrated with this truth: that beyond rational Empiricism there is for science nothing but illusion or hypothesis.

We have demonstrated that all systems of Medicine should be based on therapeutics, which is contrary to the common opinion; for all authors who have been authority, from the successors of Hippocrates to the present epoch, all, I say, excepting the Empirics, have endeavored to found their systems on the laws of physiology. The last, even, among them, Broussais, was willing to characterize his doctrine by the term physiological—a title which we are in no wise inclined to refuse to it, no more than that of many others which have preceded it. Yes, the theory of irritation is a reflection of the physological ideas of its author; the theory of incitation offers us an image of the ideas of Brown on the functions of the animal economy; the theory of Animism is a consequence of the manner in which Stahl conceived life to exist; the theory of four elements and four humors, represents the intimate play of the organs of the living body, as men figured them to exist in the times of Galen. It is the same with all other medical theories—each one of them is a deduction of some physiological idea.

The authors of these theories have reasoned as follows: To treat a disease properly, we must know its nature. Now the disease being nothing else than a derangement of health, or the physiological state of the body, it is necessary to know in what health consists, in order to appreciate the derangements which take place—that is to say, the diverse pathological states. This reasoning, which appears so just and so natural at first sight, is at bottom only an extremely subtile sophism, which clinical experience contradicts at every step. There is a crowd of diseases whose nature, or mode of formation, escapes entirely our researches, yet which we know very well how to cure—there are others, whose mode of formation is much better known to us, on whose nature we have more exact data, whose treatment is, nevertheless, but little improved thereby.

If, on the other hand, we go back to the infancy of the Art, we shall perceive that a great many remedies were found before reason had been invoked, either on the intimate nature of diseases, or on the principles or primordial properties of living beings. Finally, if we follow the history of science from its origin to our times, we shall see the physiological systems vary infinitely, and often contradict each other, while the manner of treating diseases has undergone much fewer changes. From these facts we have concluded, experimentally, that therapeutics

cannot be deduced directly from physiology; but that the precepts of the first are, and should remain, independent of the speculations of the latter.

To those who pretend to deduce the general rules of treatment from some opinion, or physiological experiment, we would recall the axiom of philosophy already invoked by us more than once: *In the succession of natural phenomena, nothing presents to us the idea of causality, or the necessary relation of cause and effect. But when the succession of one phenomenon after another is constant, the human mind, which observes it assiduouslg, and which often can foresee it even, is lead to believe that these phenomena succeed each other because they are linked together.* Thus, when the cure of an order of diseases follows constantly the employment of a medication, we are lead to regard this medication as the cause of the cure which follows its use; but it is impossible for us to perceive the physiological reason of this result, and it is, consequently, useless to seek it.

The physiologist must limit himself to describe the functions of the organism, without pretending to seize the proximate cause of these functions. While he does not content himself with depicting the phenomena of the animal economy as they are shown to us by observation, but flatters himself to be able to determine by analysis the *principle*, or *essential* phenomenon of living beings, he mistakes his rights as well as his powers. He resembles the dog in the fable, which dropped the substance to seize the shadow. He forgets that life is a finished circle, in which, consequently, there is neither commencement nor end—He, alone, who traced this circle, is able to tell us where it commences and where it ends. The man who struggles to resolve this problem, makes greater proof of folly and unmeasured ambition, than depth of mind. Far from being able to determine the principle or essential phenomenon, the object of so many vain speculations and researches, the physiologists have not even been able to assure themselves, by the most delicate observations, if life commences in the solids or liquids; for wherever life exists, we find a combination of liquids and solids, an assemblage of containing parts and parts contained—we cannot even conceive of life without this union.*

Thus, therefore, the physiologist must limit himself to the description of the normal phenomena of the living economy—the pathologist to abnormal ones, without either of them aspiring to penetrate the primitive mechanism of these phenomena. So, also, the therapeutist should

* See, among other works, in the Manual of Physiology, of J. Muller, paragraphs relative to the *forms of organic matter*, and *organic properties of the blood.*

base the choice of the curative means he employs, not on the analogies perceptible to the understanding only, but on the material and sensible analogies. Such is the *resumé* of the Empiri-Methodic doctrine, toward which the present generation manifestly inclines, notwithstanding some divergencies. It does not require a great prophet to foresee that before a long time shall have elapsed, all medical opinions will unite upon this doctrine. Do we not see researches on specific medications everywhere multiplied? Does not our age owe to this order of researches the discovery of some precious remedies for diseases, and the improvement of several others? To recall but the principal ones, we will cite the extension of the application of the febrifuge, *par excellence*, to all periodic affections; the propagation of vaccination in spite of all physiological theories; the introduction of iodine and its compounds in the treatment of scrofula and constitutional syphilis; the employment of ergot in inertia of the uterus and hemorrhages that follow accouchement; the use of tarter emetic in certain forms of pneumonia, etc., etc. Are these not results which speak stronger in favor of the specificity of certain remedies than the sophisms and eloquence of writers who strive to lead the mind in another direction, by taxing as irrational a mode of treatment unanimously recognized as the most efficacious and beneficial? The research for occasional and predisposing causes, that is to say, causes called evident, by the ancient Empirics—is it not prefered in some recent books to the research of causes called intimate, constitutive, physiological and essential? From all these signs, it is easy to foresee that the definite triumph of Empiri-Methodism, otherwise called rational or philosophic Empiricism, approaches.

But let happen what will, the first among moderns, I have endeavored to revive the name of the grand Empirical school of Alexandria. I have endeavored to resuscitate and cause to shine in greatest brilliancy its claims to glory, forgotten or mistaken for two thousand years. I have not been content to reproduce this doctrine, I have sought its enlargement and consolidation, by basing it on new philosophic dogmas of incontestible evidence, sustaining it by historic proofs sufficient to fasten conviction upon the most resisting minds. Thus comprehended and developed, Empiricism is, of all the systems, the only one which furnishes a sufficient reason for the rules of the Healing Art observed in all past and present time; the only one which is applicable to all branches of Medicine and its accessory sciences; the only one, in fine, which gives a solution of this capital problem, sought in vain by Baglivi, and so many other illustrious physicians: *the agreement of theory with practice*, of *reason with experience*. This system, it is true, takes from the mind numerous illusions which flatter our vanity, and which

become obstacles to its rapid propagation, for although the world grows older, man always remains a child, whom fictions amuse. But in a science like Medicine, fictions are never innocent; they have always caused much evil, they retard the progress of light much more than doubt and ignorance.

In a professional point of view, the history of Medicine has offered us four distinct phases:

First, a patriarchal phase, which corresponds to the origin of society, to an epoch when the chief of a family united in himself all power, and was the depository of all traditions;

Second, a sacerdotal phase, which reigned long in Egypt, and flourished in Greece from the Trojan war to Hippocrates, and which reappeared in Europe during the Middle Ages;

Third, an unlicensed lay phase, the worst of all in regard to the dignity and morality of the profession;

Fourth, a licensed, or organized lay phase, the most perfect of all known professional forms, the most appropriate to the present state of Europe, and the most favorable to the progress of science and art.

THE END.

# APPENDIX.

## PHILOSOPHICAL LETTERS

ON

## MEDICINE IN THE NINETEENTH CENTURY.

### FIRST LETTER.

#### MEDICINE JUDGED BY PHYSICIANS.

You are aware, my dear and worthy colleague,* and it is universally known, that Medicine and physicians have always furnished ample material to the wits; poets, philosophers, novelists, and writers of all descriptions have rivaled each other in the exercise of their satirical humor on this inexhaustible subject. But what is not so generally known, what most persons have always overlooked, and what must seem most singular is, that the bitterest criticisms which have ever been made upon medical science, and upon those who cultivate it, have flown from the pens of physicians.

To prove my assertion, I need not to go back to the dark picture which Galen traced of the quackery, ignorance, and avidity of his colleagues at Rome; neither need I recall the vulgar wit of a Cornelius Agrippa, nor the sarcasms of Guy-Patin. We who are disciples of Esculapius attach, in general, but little importance to the opinions and labors of our predecessors. The sharp and ridiculous pictures of Moliere, of the physicians of his time, touch us but little, persuaded, as we are, that we resemble the originals in no respect. Although only two centuries separate us from that epoch, we believe ourselves to be at an infinite

* This series of Letters was addressed to the editor of *l'Onion Medicale* in 1850.

distance above the errors and the ridiculous practices which the great Comedian pursued with his shafts, so much progress does it seem to us that science and Medicine have since made.

I shall, therefore, not seek the proofs of the fact above asserted, in the ancient authors, whose authority might be questioned. I shall take them from the most recent writings, in order to establish the evidence of the truth of my proposition, that in our days, as well as formerly, the most severe critics of the practice and the science of Medicine, have been physicians themselves.

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### I. School of Paris.

At the commencement of our century, Bichat wrote as follows:

"We have yet had in Materia Medica no general systems; but this science has until now been influenced successively by those who were leaders in the profession, and each one of these has, if I may say so, forced upon it his own views. Hence the vagueness and uncertainty which it presents to us to-day. An incoherent assemblage of incoherent opinions, it is perhaps, of all the physiological sciences, the one which shows plainest the contradictions and wanderings of the human mind. In fact, it is no science at all for a methodical mind, but is a shapeless conglomerate of inexact ideas, of observations often puerile, of illusory remedies, and of formulas as oddly conceived as fastiduously arranged. It is said that the practice of Medicine is repulsive. I say more than this: it is, in respect to its principles, taken from most of our Materia Medicas, impracticable for a sensible man. Except the medicaments whose effects are fully established by strict observation, such as evacuants, diuretics, sialagogues, anti-spasmodics, etc., that is, those which act upon a determined function, and to what does our knowledge of the other articles amount?"*

I have quoted this passage entire, notwithstanding its length: First, because it contains the opinion of a man of genius, and of an able experimenter, whose ideas and discoveries have exercised a capital influence upon medical studies in France; second, because it indicates with precision the original, radical defect of our therapeutical denominations; third, finally, because it points out, although somewhat indistinctly, the path which must be chosen to arrive at a better nomenclature and sounder notions in therapeutics. Except the medicaments

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* Bichat, General Anatomy, General Considerations. Paris, 1818.

whose effect is fully established by strict observation, such as evacuants, diuretics, sialagogues, etc., that is, those which act upon a specific function, and what is the amount of our knowledge of the other articles?"

A few years later, a physician nurtured in the physiological ideas of Bichat, and the philosophy of Condillac and Cabanis, and strengthened also by the observation of diseases, and by a large practice in armies and hospitals, traced the following picture of the effects of Medicine: "Look back," he says, "and recall what we have said in regard to the vices of medical practice; imagine, in all parts of the civilized world, legions of physicians who do not even suspect the existence of gastric inflammation, nor the influence which this phlegmasia exercises upon the other organs; see them pouring floods of vomits, purgatives, heating remedies, as wine, alcohol, liquors impregnated with bituminous substances and with phosphorus, upon the sensitive coats of the phlogosed stomach; contemplate the consequences of this medical torture, the agitation, trembling, convulsions, and phrenitic delirium, the cries of pain, tortured expression of face, and the burning breath of all these unfortunate ones who beg for a drop of water to allay the thirst which devours them, and then receiving as answer but a new dose of the poison which has reduced them to that horrible state; ⁂ ⁂ ⁂ and then decide whether Medicine has, until now, been more useful than injurious to mankind. I agree that it has rendered suffering humanity the service of offering it consolations, by lulling it continually with illusory hopes; but you must also agree that such a utility is far from being sufficient to elevate Medicine to the same rank with other natural sciences, but it seems to reduce it to a level with astrology, superstition, and all sorts of quackery."*

"Thank me, kind reader, for I have shown you but one-third of this picture, whose colors grow constantly darker and darker. What I have given suffices to prove that the epigrams of philosophers and poets, upon the faults of physicians and the pernicious effects of their Art, are but feeble sketches by the side of this picture, at once so animated and so frightful. It would fill every honest and sensible heart with disgust for the practice of such a profession, if the author of this description had not placed the remedy by the side of the evil he paints. This remedy, as you will understand, is nothing else than his own doctrine, in favor of which, he says, the statistics of mortality have already declared, and *which must in a short time have an influence upon population more marked even than the discovery of vaccination.*"†

We shall see, a little farther on, how these doctrines of the Val de

* Broussais, Examen des Doctrine Medicales. † Ibid.

Grâce were appreciated and are appreciated yet, by other schools. But first permit me to quote here the opinion of one of the most eminent partisans of this doctrine, now a distinguished professor of the faculty of Paris. He, after giving the opinions of Pinel, Bichat, and others, on the practice of medicine, adds: "Considered in general, and absolutely, these sentences are too severe; indeed, there are a certain number of diseases in whose treatment therapeutics has attained, long since, a high degree of certainty and precision. But it is also true that these reproaches apply themselves in all their severity to several points of our therapeutics."*

Mr. Bouillaud is not at all an optimist in his judgment upon the ideas and the practices of his predecessors; still we must praise him for having avoided the exaggerations of his master in this respect. He is astonished to meet a great many laymen, and even a few colleagues, who ask him privately and in good faith, if he believes in Medicine. "In their opinion," he says, "Medicine should, to a certain point, be assimilated to the science of those Augurs who could not look each other in the face without laughing." M. Bouillaud should rather be astonished that, after the declaration of so many illustrious physicians against this science, there are still persons credulous enough to believe in it, and bold enough to invoke its aid. Should not the instinct which leads men to trust in the prescriptions of an Art which has been so much derided by its own adepts, be a safer and surer guide than the reasoning of its detractors? This is a very grave and very difficult question, whose solution we cannot yet attempt.

Let us pass on to other medical schools, or rather to other medical sects. Toward the end of the last century, Pinel, in the first edition of his nosography, declares that he does not propose any other problem than the following: "A disease being given, determine its true character and the rank it must take in a nosological table." Thus he leaves all considerations in regard to treatment, so to say, in the rear. He dare not lay down one single general proposition of therapeutics; not because he is unaware of the extreme importance of this branch of science, but because he considers it too little advanced yet to be comprehended in generalities. The proof that this was really his thought, is, that twenty years later, in a note to the sixth edition of the same work, he declares that therapeutics, or the methodical treatment of diseases, is one of those parts of Medicine which must undergo a general reform, and upon which the attention of true observers cannot be too often invited, as a serious subject of their researches."

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* M. Bouillaud, Essai sur la Philosophie Medicale.

M. Louis does not accuse therapeutics alone of being still in infancy, but also all other branches of Medical science. "The physicians of antiquity have given us," he says, "very incomplete descriptions of the diseases which they observed. They have left us numerous therapeutical precepts, but they are deprived of proof. ✲ ✲ ✲ The modern physicians have scarcely been more successful. ✲ ✲ ✲ And still we count among the physicians of antiquity, as well as among their successors down to our days, illustrious men, of rare capacities, who apparently wanted nothing to advance science, especially since pathological anatomy has been allowed to be cultivated without opposition. How, then, is it that science owes them so little in general, and that its history is in many respects only that of their errors or of their systems." ✲

M. Louis and M. Bouillaud attributed the errors of the ancients to the faults and imperfections of their methods of examining diseases. Consequently each of them traced a formula or a model for clinical observations, to which they thought every one should conform, in order to avoid the faults and errors with which they reproached their predecessors. They insist, also, in having enumerated all the cases of success or failure, in order to appreciate the value of the different modes of treatment proposed for each species of diseases. This is a condition very easy to fulfil, and which should never be neglected, although it does not possess all the importance which these gentlemen give it. In fine, they are both convinced that in following the rules which they prescribe, we shall march henceforth, with a firm step, in the path of progress.

This seems, nevertheless, to be an opinion contrary to that of the authors of a *Treatise on Therapeutics*, published a few years later; for we read in its preface the following paragraph: "We do not believe that by a work of the nature of the present one, we should or can set right an entire generation, which, according to our opinion, turns its back on truth, and which will have to march, perhaps for some time yet, in error, until that shall fall by its own consequences." †

Thus, according to these latter, we have not only been in error until now, but we are so yet, and are obliged to remain so for an indefinite lapse of time. What, after this, shall the mass of practitioners and students do and believe, if the teachers themselves agree so little with each other that every new work which appears contains a more or less explicit condemnation of all those that have preceded it? Does not this popular

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✲ Memoires de la Société d'Observationes Médicales. Year 1837.

† MM. Trousseau et Pidoux, Traite de Therapeutique et de Matiere Medicale, 1841. In the third edition of their work, the authors give a resumé of their doctrine. We shall speak of this philosophical conception in the following letter.

medical saying, which is a parody on the verses of a cotemporaneous poet, correctly say:

"*Driven thus from system to system, shall we never be able to throw out our anchor?*"

Now, this want of union which I have pointed out as existing among the masters of this science, does not relate to details only: no, it is mostly upon the very principles which form the foundation of medical science that they disagree. Each one of these medical legislators aspires to nothing less than to build his ideal monument upon the ruins of all others. They all commence by destroying what exists, leaving to others to build up again when and how they can.

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### §II. School of Montpellier.

There exist, however, medical Faculties in France as well as elsewhere, among which the worship of the ancients is held in higher honor than it is in Paris, and where the respect for the doctrines of the great masters is transmitted from generation to generation. In Montpellier, for example, the physiological idea of Hippocrates, illuminated and extended by Barthez forms to this day the foundation of their medical instruction; and M. Lordat, one of the most distinguished professors of that school, has lately published a work consecrated to the development and the demonstration of this same Hippocratic idea.*

Not that from time to time some discordant voice is not heard amid this harmony; but if some heresy does show itself there, it does not ostensibly destroy the orthodox doctrine, but rather softens and hides its opposition under reverential forms. Thus the historian of the medical doctrine of Montpellier, after having enumerated the works of Barthez, and paid a just tribute of praise to his genius, gives an excellent critique of his system.†

He goes still farther. He announces in different places a maxim, which, if true, overthrows completely the medical doctrine of Barthez, and of all those who have followed or may yet follow the same route. It is as follows: "Physiology can not serve as a basis for practical medicine."

Such a proposition, I repeat it, does ruin not only the system, of Barthez, but also many other ancient and modern systems. But M. Berard has contented himself with announcing it, without supporting it

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*Mt. Lordat, Preuves de l'Insenescence du Sens intime de l'Homme. Montpellier, 1844.

† F. Berard, Doctrine medicale de Montpellier.—Paris, 1836.

by a single direct proof; on this account this bold proposition, which contains the germ of an entire medical revolution, has passed by, so to say, unperceived. So far as I know, no one has even taken the pains either to contradict it or demonstrate it formally. I shall endeavor to fill this vacuum. I shall discuss, and in another letter will try to solve the following difficult question, which should be the preliminary of every medical doctrine: "Can physiology form the base of the practice of Medicine?" In the meantime let us continue our review of the opinions of physicians in regard to the theory and practice of their Art. For this purpose we will take a look out of France, in order to see if in other countries there exist as deep dissensions on this subject as there are in our own. We shall, as we have done thus far, consider only the capital points of disagreement, *i. e.* those which have a bearing upon the entire science, or upon its fundamental principles.

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### § III. Italian School.

At the end of the last century the doctrine of Brown was introduced into Italy, and was received there with enthusiasm. Rasori, who had studied it in England, contributed much to its extension. This doctrine, as you well know, recognizes as the cause of nearly all diseases, too great force or weakness (*sthenia* and *asthenia*). Out of one hundred species of diseases there are scarcely three, according to the tables of Linch, which can be regarded as being caused by an excess of vitality or incitability. Therefore, nearly all medicaments, most all modifiers of the human economy, are considered to be stimulants, and according to this system, the art of the physician consist simply in proportioning the force of stimulation to the degree of asthenia of the patient. Medical science and practice are both reduced by it to their utmost degree of simplicity, which fact explains the rapid propagation of such a system.

Still, Rasori himself perceived, or thought he perceived, after a few years of practice, that certain modifiers did not act by stimulation, but rather by sedation, or contra-stimulation, and that a large number of diseases were based, not upon depression of vital forces, but upon their exaltation. From that time he became a reformer himself, and henceforth Italy, as well as France and England, had each her own indigenous medical system founded upon the ruins, and to the exclusion of all others.

"When we think," says one of the most enlightened partizans of the Rasorian doctrine, "from what sources the ancients obtained their notions of materia medica, we can not be astonished that Stahl has called the pharmacology of his time a stable full of offal, and that

Bichat has judged so unfavorably of that of his epoch.* In this we have the condemnation *en masse* of ancient Medicine."

In speaking of cotemporaneous Medicine he says: "While the art of diagnosis has made immense progress in France, that of the application of medicaments has been entirely neglected. The special doctrine of revulsion plays a considerable part in the French schools. Formerly all was sympathy, *consensus*, in diseases; now every thing is antagonism or revulsion."

This is as much as to say, Frenchmen understand diseases very well but cannot cure them—that we treat them irrationally. What great advantage! to be able to explain to a patient the nature of his disease, to discuss with more or less skill the origin, the seat, the progress, and the probable consequences of the affection of which he suffers, but to be unable to relieve him? What would the irritable Broussais have said of such a judgment on his doctrine; he who believed to see already in the diminution of mortality the happy results of its propagation; he who exalted its blessings as being far above those of vaccination? He would, doubtless, have cried out against ignorance, blindness, and injustice; but that would not have prevented strangers from exercising their judgment on our Medicine in the same manner as we judge theirs, *i. e.* from a special, exclusive, and unfavorable point of view.

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### § IV. Parallel between the English, French, and Italian Doctrines.

While in the native country of Brown most diseases are considered as proceeding from a certain degree of feebleness, a diminution of vitality, and are combatted by an increase of excitation, in France the disciples of Broussais considered most pathological alterations as the product of an excess of excitability or irritation; and they have nothing so much at heart as to calm this irritation, to extinguish this phlogosis by means of sedatives or antiphlogistics.

In Italy they agree with the French in regard to the nature of the morbid affections, which are generally considered as connected with a sthenic diathesis, but the former differ widely from the latter in regard to the appreciation and the use of therapeutic agents. The same articles which pass on the north side of the Alps as energetic excitants and powerful tonics, pass on the other side as sedatives, or hyposthenics. Thus the quinine, which, in the eyes of the French and the English, is

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* Giacomini, Traité philosophique et experimental de Matiere Medicale, et de Therapeutique. French translation, by M. Rognetta and M. Monjon. Paris, 1845

an excellent tonic, has in the eyes of an Italian only a depressive hyposthenic action; cantharides, mercurials, iodides, etc., which in France are classed among the acrid poisons and irritants, are ranged by the Rasorians among the contra-stimulants and sedatives.

Thus, then, we may say that there exists in Medicine, as in theology, an Anglican, a Gallican, and an Ultramontane doctrine; and these medical doctrines are not distinct from each other by mere shades of difference, but they differ in their essentials—they exclude each other mutually, and contradict each other reciprocally.

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### §V. German School.

Germany could not remain behind the other countries in medical inventions. She felt the need, also, of having her own national doctrine for the nineteenth century, stamped with colors truly Germanic. This was thoroughly understood by Dr. Hahnemann; consequently he commenced dreaming, meditating, and experimenting, but especially dreaming, until at last a ray from on high illuminated his mind; the true law of past, present, and future cures appeared to him like a revelation, as a pure action of divine love. Great physicians of antiquity and of modern times, whose collective works of thirty centuries have served to raise the scientific monument of the Healing Art—illustrious men, living and dead, bow before this medical messiah! Your lights were but darkness, your teachings pure deception, your practice a series of blunders and homicides!

The same would be the case yet, if the pious, the modest Hahnemann had kept to himself his great discovery. But he did not wish to deprive his fellow men of such immense blessings; he hastened to propagate it every where; and if the entire human species does not enjoy these blessings to-day, it is not from want of good will on his part.

Do not imagine, dear reader, that I am jesting, or exaggerating the mistico-emphatic language of the German thaumaturge, in order to render him ridiculous. Hear him speak, himself. After having recounted how he had succeeded in finding the only true way of obtaining veritable, easy, prompt, and certain cures, he exclaims: "For truth is eternal, like divinity itself. Man may neglect it for a long time, but the moment comes at last when, in the fulfillment of the decrees of Providence, its rays pierce the cloud of prejudices, and throw over mankind a beneficent light, which henceforth nothing can extinguish."*

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* Hahnemann. Organon. Paris, 1845.

"If I did not know that I am placed in this world in order to improve myself as much as possible, and to do to others all the good of which I am capable, I should consider myself very foolish in making the public acquainted, before my death, with an Art of Healing which I alone possess, and whose advantages I might consequently have enjoyed alone, by concealing this Art."*

The inventor of Homeopathy and infinitisimal doses might have been asked—If you had kept your secret until you descended into the grave, who could guarantee you that it would not have been buried with you? And even if it should not have fallen into oblivion after your death, you would not have enjoyed during your life such notoriety; you would have passed away in some obscure corner of the world, and your exit would not have caused the least sensation. You had therefore a great and immediate interest in divulging as early as possible your discovery, independently of the satisfaction which every man, every Christian must feel in fulfilling a duty toward humanity. For nothing equals, if we believe you, the frightful evils which were inflicted upon mankind by former Medicine — this fatal Art, as you call it, which for centuries has enjoyed the power to decide, arbitrarily, on life and death, which destroys ten times more than do the most murderous wars, and which makes millions of others infinitely greater sufferers than they were at first.†

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### § VI. Conclusion.

I will limit here my citations. I believe that I have superabundantly proved what I said at the commencement of this letter, that there exist no more violent detractors of Medicine than physicians themselves. Can we be astonished, after this, that we find among them so many who are incredulous, so many sceptics, who exercise their Art without having faith in it? But I know of no more revolting position for a conscientious man, nor a more ridiculous one, than that of a physician who has no confidence in the means he employs. Such a man can not possibly pursue the study and the practice of his Art with the zeal, application, and assiduity which alone can secure him real, honest success. For, in order to study and practice Medicine well, says a wise man of our time, we must give it great importance, and to be able to do this, we must believe in it.‡

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* Hahnemann. Traité des Maladies Chroniques.

† Organon.

‡ Cabanis. Du degré de Certitude de la Medicine.

It is therefore essentially necessary that the physician, as well as the public, have a reasonable opinion on the degree of confidence which may be placed in Medicine. But where shall we find motives of conviction in favor of this science, when its most renowned masters are so bold and so loud in discrediting it? When every new medical generation accuses all preceding ones of gross and fatal errors? Who can assure us that the teachings of to-day will not be treated as vain deceptions to-morrow, in a few years, or a century hence? Is there in this matter any certain sign, any criterion by means of which we may infallibly discern the true from the false, the certain from the mere hypothetical? This we shall examine in our next letter.

# SECOND LETTER.

## IS THERE IN MEDICINE ANY MEANS OF DISCERNING THE TRUE FROM THE FALSE, THE CERTAIN FROM THE HYPOTHETICAL?

### § I. Importance of this Question.

It wants only one moment's reflection to be convinced of the extreme importance of such a question, upon whose solution depends, if I do not deceive myself, the whole future of the science. Indeed, if there exists a criterion by the aid of which we can surely recognize truth in Medicine, if this criterion is within reach of every mind, and is applicable to every part of medical science, then we understand at once that this science is possible, and those who devote themselves to its erection may hope not to work in vain.

But if such a criterion does not exist, or has not been found, this science is impossible; then all our knowledge of medicine is conjecture, hypothesis, and opinions, more or less probable. It is, therefore, of the very greatest importance, before we lay the foundation of the scientific monument of Medicine, that we examine if we possess a rule, a fixed standard, accepted by all, by means of which we may judge with certainty the value of the facts and ideas which shall in future constitute this monument.

As a skillful architect, before he proceeds to the construction of an edifice, reduces all his measures, and all his calculations to a known and invariable quantity, called unit, so also must physicians choose a fixed, uniform, and sure criterion, in order to estimate the degree of certainty, adaptation, and utility, of the different propositions which form the materials of their science. Without this precaution they will never be able to agree upon any subject. Their discussions will continually degenerate into mere verbiage, as has been the case too frequently, until now, and they will continue to offer to the world a ridiculous spectacle, like individuals who, desirous of appreciating a common object, as for example, the hight of a steeple, or of a mountain, still persist, each one according to his own caprice, in taking a different standard as unit, bearing no relation whatever to the other measures. Such surveyors would most certainly never arrive at identical or even comparable results.

It is, therefore, essentially necessary, if we wish to put an end to this continued and profound conflict of medical opinions — a conflict so injurious to the progress of science, and to the standing of those who cultivate it — it is necessary, I say, to choose a mode of appreciation which belongs to all times, and all places, embracing all facts, and all ideas, that compose, or may yet compose, the science of Medicine; which will bring them all back to a unique, universal, invariable standard, known and accepted by all. Now, in order to find such a mode of appreciation, which is perfectly appropriate to medical researches, we must know their final aim—just as a traveller must have fixed the point which he desires to reach, before he decides which route to take, without which he travels at hazard, like a fool.

Let us examine, therefore, first of all, what is the final aim of the science of Medicine.

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### § II. Final Aim of Medical Science.

In the primitive ages Medicine was defined to be *the Art of Healing;* at that time therapeutics was evidently the final aim of that science. Later, when the field of observation had been widened, it was seen that it was often much easier, and always more advantageous, to prevent diseases, than to combat them after they were developed. Consequently, the tree of medical science brought forth another branch, called hygiene, or prophylaxy, whose special object consists in preserving health, or preventing the development of diseases. Properly speaking, this new branch is an offspring of therapeutics, and was so considered by many ancient as well as modern authors, and thus this science has not changed its aim by this accession, but has been enlarged and extended by it.

For some time past, Medicine has occupied itself in a more efficacious manner, with two very important orders of morbid affections, which formerly were entirely overlooked, or at least much neglected—I allude to the deformities which are the objects of orthopedia, and mental affections, which constitute at this time one of our most interesting specialities. In view of these additions, Medicine can now be defined: a science whose object is the preservation of health, the cure of diseases, and the physical perfection of man. Remark, I beseech you, that in these successive evolutions the aim of the science does not change, and it never leaves the sphere of therapeutics. Therefore, it may be said for all epochs with equal truth:

*Ars medica est id quod est propter therapeuticen.*

Everything in Medicine is related, or should relate, to therapeutics.

§ III. Answer to the Question placed at the Head of this Letter.

Now, as the aim of the science of Medicine is fully known to us, nothing is easier than to determine the route which leads us to it, or, in other words, than to find a sure method for the discovery and the foundation of truth in Medicine. We can, from this moment, establish the following general proposition: Every notion, every idea, every hypothesis, every system, which is useless to therapeutics, must be banished from Medicine, as useless and superfluous; every notion, every idea, every hypothesis, every system, which leads to false or hurtful consequences in therapeutics, must be rejected as tainted with error.

Then, if we ask by what means, in what way, we can assure ourselves that any doctrine is either advantageous, or barren, or prejudicial to therapeutics, I acknowledge that I know of none better, or more direct, than *experience*. Thus, in my eyes, the universal criterion of truth in Medicine, the supreme test of the value of all ideas and discoveries which belong to this science, is none other than *therapeutical proof*. It seems to me that I see the reader smile at this word, and hear him say: This is certainly no new maxim! There is no one who does not agree that therapeutical proof is the best and surest mode of verification which we possess in Medicine—the *ultima ratio* of all medical doctrine. Every day the founders of new systems appeal, themselves, to this definitive tribunal. But this does not prevent and never has prevented the most absurd theories, the most ridiculous errors, from invading the domain of this science; and there reigns to-day still the most complete want of harmony among physicians upon the most fundamental questions of the Art. This objection, therefore, is serious, and should be closer examined; but I do not believe it insoluble, and I will endeavor to reply to it. It is not sufficient to proclaim in a vague and general manner that therapeutical proof is the best criterion in medicine; it is also necessary to know how to make a rational and methodical use of this universally admitted criterion; just as it does not suffice to possess an excellent musical instrument in order to obtain pure and harmonious sounds; but we must also understand a good method of playing, and have practised on it.

Now, I ask, does there at this time exist in our science a general system of therapeutics,—a system which embraces as a whole, logically arranged, all plans of treatment? Is it not, on the contrary, an opinion universally accredited in all the schools, that the time has not come yet for a rational systematizing of this branch of Medicine? You have read in my First Letter (§ 1) what some of our cotemporaries think

upon this subject. You may appeal to any other of our modern classics—you will not find in one of them a different opinion. All agree in admitting *rational* and *irrational* modes of medication, which latter they call also *empirical.* But what is oddest in this classification, is that the modes of medication called *irrational* are generally the most efficacious.

It is therefore a new idea, which possesses at least the merit of originality, to try to construct logically the entire field of therapeutics—to unite in one plan and under the guidance of a unique principle all modes of internal and external medication, without regard to any pathological system. Such an idea must appear certainly very paradoxical to those who profess with M. Bouillaud that "therapeutics is necessarily but a *deduction*, a *corollary* from the ideas which are formed on the *nature* of diseases," and that it cannot be anything else.

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§ IV. Inquiry after the Fundamental and Universal Principle of Therapeutics.

If the question were asked, what has taught men to provide for the indispensable things of life, to prepare their food and clothing, to construct habitations to shelter them against the rigor of the seasons, etc. etc., no one would be at loss for an answer. It is want, necessity, the instinct of self preservation. If we now ask, what has inspired these same men with aversion to pain, the fear of disease and death, the desire to defend not only themselves but also those who are dear to them, against these afflictions? we can answer with the same assurance: It is a natural, irresistible instinct, which is felt alike by the savage on the desert and the inhabitant of the city, by the poor and the rich, by the philosophic and the illiterate.

Now, experience early taught the inhabitants of the earth that nature alone is insufficient to aid them, in many instances. As for example, an individual breaks a limb: nature is incapable of bringing and keeping together the two ends of the broken bone. Another dislocates an arm or a leg. If he expects from nature the reparation of this accident, he will be deprived for his whole life of the full use of his limb. A third ruptures a large vein or an artery; nature, powerless in this case, will suffer this individual, full of health and life, to succumb from the loss of his blood. Let a woman in labor be seized with convulsions or violent hemorrhage, or let her child present itself in an unfavorable position, and what will mother nature do in presence of such accidents? Nothing. She will allow both victims to perish. In fine, there

happen every day in the natural course of life, a number of accidents which nature alone is incapable of repairing. Hence men very early acquired the conviction that they could only expect aid from Providence when trying to aid themselves by every means at their command. Consequently, as soon as one of them received a wound or was attacked by a disease, those who had witnessed similar cases were invited to see it, that they might indicate the remedies which they had seen employed in similar cases. Soon there were found men, especially old men, who distinguished themselves by their skill and experience in these kinds of accidents, and who transmitted to others the fruits of their observations. Such was, among many nations, the origin of medical science, as is attested by tradition and authentic monuments.* Afterward, the art of writing having been invented, it became possible, with the aid of this admirable art, to preserve indefinitely the remembrance of diseases, and the means used for their cure. Henceforth they began to form nosological collections, *i. e.* collections containing more or less detailed descriptions of the morbid affections which were observed, and of the treatment which was employed against them. These collections became the first codes of the Healing Art, and the men who devoted themselves especially to the care of the sick studied them no doubt as rules for their conduct. Gradually these collections were enlarged by successive additions of new observations; so that when they had attained a considerable volume, it became necessary to arrange the materials of which they were formed, in a certain order, which made it easy to find at pleasure the instructions that were wanted. This was the origin of pathological classifications. The idea of it was suggested by the desire to aid the memory and facilitate researches.

At that epoch very little was done in the study of the intimate nature of diseases and the physiological action of medicaments. They were satisfied to observe and to describe the morbid phenomena as they showed themselves, and to note the apparent effects of the remedies. And this is done yet by all persons ignorant of the science of Medicine, when they undertake to give their advice to the sick. These persons have no other way of expressing themselves than the following: I have seen *precisely* the same disease cured by such or such remedy,

At first sight the medical practice of those primitive times seems to us gross and scarcely reasonable; but when we consider it nearer—when we examine with unprejudiced eyes the motives which directed it, we find that, far from being unreasonable, this practice was based upon a principle of incontestible evidence, which may be stated in the following

* Primitive Period; Medicine among the Egyptians.

words: *Every kind of medication which has cured one disease must also cure analogous diseases.* No objection can be made to this principle. It possesses all the clearness and infallibility of a mathematical problem; it corresponds with the following metaphysical axiom: The same cause, the same force or the same combination of forces, acting in identical conditions, will always produce the same effect.

We see also by a little reflection, that the above announced principle embraces all the operations of internal and external Medicine, as well as all the precepts of prophylaxy. Thus there has existed at all times a fundamental and universal principle for the practice of Medicine; a principle by which the physicians of the most remote times were guided without knowing it, and which is followed yet, though ignorantly, by all persons without medical knowledge, when they undertake to give advice to the sick.

But if it may be permitted, as Moliere says, to write prose without knowing it, it is still better to do so knowingly, because it is then done much better. So if there are now persons who employ this fundamental principle of therapeutics without understanding it, it is still better to employ it understandingly. This is, besides, more worthy of a practitioner who loves to understand the motives of his conduct, and it is also more satisfactory for the patient. Let us see, therefore, how we can make a logical application of the above proclaimed principle.

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### § V. Rational Application of the Universal Axiom of Therapeutics.

I have said it was a new idea to try to bring therapeutics under the dominion of a single principle, disconnected from all pathological systems. This is true only in regard to modern times, for there existed in antiquity a sect of medical philosophers who conceived the same project and attempted its execution. But their doctrine did not prevail, because they did not develop it fully, or did not defend it well, or it may be that their cotemporaries did not understand and appreciate it. At all events, their labors and their system have been almost completely lost, and their name has in many instances become a word of reproach.*

In reflecting a little upon this axiom, *Each remedy which has cured one disease, must also cure analogous diseases,* we can not fail to perceive that its practical application depends upon three conditions, viz: the homogeneousness of the diseases, identity of the curative means, and knowledge of the best possible treatment for every morbid species. Let

* See Philosophic Period.

us see, therefore, how we can fullfil these three conditions, if not in a perfectly exact manner, at least proximately.

### FIRST CONDITION.—HOMOGENEOUSNESS OF DISEASES.

No practitioner during his whole life has ever met two identical morbid cases, and nature perhaps never produces them exactly alike. We must therefore be contented with a greater or less similarity. But on what degree of approximation must the physician rest, or, in other words, in what symptoms will he recognize similitude enough in two diseases, one of which is under his eye and the other has been observed formerly, in order to treat the second by the same remedies as the first?

We are touching here the most knotty question in pathology, the question which has been the object of the most assiduous researches and the most profound meditations, the question which has excited the most discussions, given birth to the greatest number of systems, and engendered the most errors: *What are the characteristic signs of the homogeneousness of diseases?* Interrogate the physicians of all sects and of all times upon this subject, and they will all give you different and even contradictory answers.

In the beginning, they were satisfied with a mere superficial resemblance; it sufficed that a patient presented one or two symptoms similar to those which had been observed in another, to authorize the application of the same treatment. It is upon this same gross appearance that quacks and charlatans judge yet, daily, of the similarity of diseases, on which they advise certain kinds of medication. Let a child, for example, be attacked with a slight impetigo of the face or head, and a quack (pharmacopole) will not fail to prescribe bitters, depuratives, and setons, without even examining the state of the digestive organs or the nervous susceptibility of the little patient. Let an old man cough up some mucus, and at once they administer a variety of cough mixtures.

Men accustomed to the observation of diseases dare not prescribe remedies so thoughtlessly. They know how faulty and dangerous is this manner of diagnosticating and determining a pathological state. "I have always felt it acutely," says Pinel, "and I feel it yet daily, how important it is for us to cultivate, after the example of naturalists, the science of signs, to become accustomed to understand well the external characteristics of diseases, and to be constantly guarded against illusion and errors in difficult cases."

"Notwithstanding the immortal works of Morgagni," says M. Bouillaud, "notwithstanding the anatomo-pathological impulse which Bichat and his school had given to Medicine, and which Pinel has the credit of following in several parts of his nosography, notwithstanding all this,

the time had not yet come when diseases were, so to say, personified, by attaching them to the organs; in a word, localizing them. This great era, for which preparations had long been made, shone only in all its splendor at the epoch when the author of *Chronic Phlegmasia* took the scepter of Medicine, which the old Pinel had borne so long with honor, but whose weight he could no longer bear. This new era dates from the year 1816, when appeared the famous *Examen de la doctrine Médicale généralement adopteé*, with the following epigraph, taken from Bichat: *What is observation worth, if we are ignorant of the seat of the disease?*

Thus the nosological formula of Pinel which had, at the commencement of the nineteenth century appeared to be so exact, is judged as insufficient by Broussais but a few years later; and the formula of Broussais, so highly praised by M. Bouillaud, appears to-day as incomplete in many instances, so true is it, that the diagnosis of diseases changes in proportion to the progress of science, and offers at all times difficulties which the vulgar do not even suspect.

It is frightful what immense and minute details M. Louis demands for the true appreciation of pathological facts; still, after serious reflection, we are obliged to agree with him that *these details are necessary in researches after truth.*

Here is the abridged table of the principal characteristics which constitute to-day the diagnosis of diseases, and by which we are able to discern the different morbid species, or the homogeneousness of each of them: First, the circumstances anterior to the invasion of the disease, which comprise the predispositions or diathesis, the occasional or determining causes, contagious infections, etc.; * second, the anatomical seat of the disease, *i. e.*, the designation of the organ or tissue principally affected, and sometimes the indication of a vitiated humor; third, the mode and degree of alteration of the organs; fourth, the idiopathic and sympathetic functional derangements, their regular or irregular, continued or intermitting course; finally, the cadaveric lesions found in those who have succumbed to the same morbid species.

We see by this enumeration of the principal objects which constitute the diagnosis of a disease, that in order to be able to fulfill this condition well, we must unite to a most precise knowledge of nosography and pathology, the lights of anatomy, physiology, chemical analysis, pathological anatomy, etc., etc.

This immense difficulty of diagnosis is, without contradiction, one of

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* Memoire sur l'Examen des Malades et la Recherche des Faits généraux, by M. Louis. Paris, 1846.

the greatest obstacles which we meet with in the study and practice of Medicine. There are no systems, no combinations which pathologists have not imagined, with the view of overcoming or facilitating it. All have endeavored to unite the infinite number of varieties of diseases into a small number of types, distinguished from each other by appreciable characteristics.

Hahnemann alone, wishing to spare himself and his disciples the labors of diagnosis, has given the singular precept to note one after another, without choice, without discernment, in the mere order in which they make their appearance, all the symptoms observed during the course of a disease, either by the patient himself or the physician. But this method, apparently so natural and exact, is in reality extremely defective and even impracticable, as will be evident by the following table:

First, Such a method is extremely defective, for it makes the capital error of ascribing the same value to all morbid phenomena, while there exist immense differences among them, as the most superficial clinical observation proves. What shall we think of a pathologist who considers as signs of the same disease, and as possessing equal value, the following symptoms:

Insatiable thirst,
Palor of face,
Scrofula,
Sweating of the head after sleep,
Burning in the palms of the hands,
Frequent attacks of suffocation,
Furuncles,
Vomiting of blood,
Hiccough after eating or drinking,
Cutting pain in the rectum while at stools,
Absence of venereal desires,
Unbridled lusts,
Somnolency during the day, after meals,
Paroxysms of anger bordering on mental alienation,
Tears, frequently, at the slightest causes, etc., etc.*

Thousands of phenomena, thus thrown together without order, constitute no more clinical observation, and give no better idea of a disease, than a number of stones piled up without plan constitute the Pantheon, or than lines drawn capriciously on paper present the image of a regular monument. This is certainly no method at all; it is the absence, the negation of all method in pathology. It is chaos.

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* See Treatise of Chronic Diseases by this author.

Second, a peremptory motive opposes the adoption of such a proceeding. This motive consists, as we have said above, in the impossibility of its being put into execution. Indeed, let one try to note down all the slight and grave, passing and permanent accidents which arise in the course of a morbid affection, and take account of all the changes, all the impressions, moral as well as physical, which the patient experiences every day, every hour, yea, every minute. It would be just as reasonable to try to count all the grains of sand driven before a storm, or the atoms which a ray of light falling into a dark room, causes to glitter in the air. Both the undertakings are equally impracticable and futile.

We are therefore led by the natural connection of ideas, and the irresistible force of things, to make a choice among the symptoms which present themselves in the course of a disease. We are obliged to ask ourselves the question: which are among the pathological symptoms, those which are of greatest importance, those which are less grave, and those which are of so little value that they may without inconvenience, be entirely overlooked?

SECOND CONDITION.—IDENTITY OF CURATIVE MEANS.

Hygiene and materia medica being the two sources from which Medicine draws its means for combatting disease, it is evident that the practitioner must be fully acquainted with the resources which these sciences offer him. Now, hygiene receives its light principally from physics, chemistry, etc.; materia medica cannot be understood without a knowledge of pharmacology, natural history, etc. Thus the practitioner dare not remain a stranger to any of these branches of human knowledge, in order that he may be able to choose, prepare and superintend the use of curative agents with the greatest possible discernment and exactness. It is furthermore indispensable that he obtain on the part of the patient himself, entire obedience, and faithfulness on the part of the attendants.

THIRD CONDITION.—KNOWLEDGE OF THE BEST POSSIBLE TREATMENT OF EVERY MORBID SPECIES.

The aptitude to fulfil this last condition, that is, to discern the treatment best adapted to each pathological case, constitutes alone the true practitioner. This distinguishes him from the mere erudite; it forms the cap stone of all medical education. But nothing is more rarely found than such an aptitude; and nothing is more difficult to acquire. It can only be attained by combining the scientific knowledge of the century, with a large practice, directed by a wise method, and conducted by a sincere desire to be useful to his fellow man, and by a reasonable faith in the efficacy of the Art.

It is a truth proclaimed by all the masters of science, that it does not suffice to see a great number of patients, in order to become a good medical practitioner; but that it is also necessary to examine every case with a care and a zeal which cannot be shaken by the fatigue or disgust to which the practice of Medicine is subject. Now, he alone is able to overcome such obstacles, who devotes himself to the study as well as to the practice of his Art, with a real love for mankind, and a reasonable confidence in the means he employs. Even popular instinct knows very well how to distinguish the practitioner who observes his patients with attention and interest, from him who scarcely examines them at all, listens to them inattentively, and prescribes for them with indifference.

But let us suppose a physician to be provided with the necessary knowledge, and animated by sentiments worthy of his profession, what method must he follow to arrive at the determination of the treatment best adapted to each morbid species?

We have already said that the first experimentors did not reason at all upon the intimate action of remedies, but that they contented themselves to observe their most apparent effects, and to note those which had cured, or seemed to have cured certain diseases, in order to employ them again in similar cases. The first materia medicas were so arranged that curative means were classed according to their most usual and evident effects. Blood letting for example, must have been classed among the depletives of the blood vessels; hellebore with the eccoprotics, because it produces, generally, alvine evacuations; opium with the upnotics or anodynes, because it often produces sleep, and allays or cures pain. This classification, and these denominations, were irreproachable, for they were founded upon a real and incontestible action of the curative agents. Besides, if imperfections or errors had entered into the first collections in consequence of superficial or too hasty observations, a riper, more attentive observation, would lead to their expulsion. Thus, for example, after having classed opium with the upnotics, nothing forbade to add that this substance sometimes produces agitation instead of sleep; whence it follows that it is to be administered with great circumspection, and only after determining fully under what circumstances and in what doses it produces or augments agitation.

We see by these examples that therapeutics, which from the beginning had been founded upon the simple results of experience, should have been enlarged and perfected by the same method, that is, by continuing to take into account only the pure results of experience, without seeking to explain them. Such is, indeed, the method to which Bichat

seems to allude in the following sentence: "*Except the medicines whose effects are established by strict observation, such as the evacuants, diuretics, sialagogues, etc., and to what does our knowledge of the rest amount?*"

But there arrived a time when this manner of studying the action of therapeutic agents appeared to be too simple, too superficial, too much subject to error. Physicians wished to penetrate deeper into the secret of the modifications which each medicament produces upon the human economy. They reasoned thus: The sensible effects vary frequently, according to a great number of circumstances, often difficult to appreciate. As these consecutive effects all depend upon the intimate molecular impressions which each therapeutical substance exercises constantly in the organism, if we can only arrive at determining the nature of this impression, we shall, by this means, know the secondary effects which depend upon them—we shall be able to foresee and explain them logically.

This new method was considered the most rational, the shortest and most direct. It prevailed, at length, almost universally in science, and is yet followed by most of our medical writers. Still it has produced but very unsatisfactory results, as we can judge from the great want of harmony which reigns to day upon this subject in the profession, as I have proved in my First Letter, and which Bichat has painted in such energetic colors.

"Into what errors in the use and denomination of medicines have we not been lead? When the theory of obstruction was in vogue, desobstruants were created. Incisives sprang up when the theory of the thickening of the blood became the favorite idea. The expressions, dilutants and attenuants, and the ideas which were attached to them, arose at the same epoch. When it was necessary to obtund acridity, inviscants, incrassants, etc., were created. Identical means have often had different names, according to the manner in which they were supposed to act—desobstruant with one, relaxant with another, refrigerant with a third—the same medicament has been employed in turn, with different and even opposite views, so true is it that the human mind marches at hazard where the vagueness of mere opinions guide it." *

This would be the place to speak of the therapeutical methods—that is, of the general plans of treatment which might be formed in the actual state of science, independently of all pathological systems. But I cannot treat at the end of a letter, so important a subject, upon which I have to say so many things which differ from the ideas received in our

* Anatomie Générale.

schools. I shall reserve it, therefore, for another occasion, when it will be possible for me to treat it as widely and as much in detail as the subject demands.

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### § VI. Conclusion.

We have proved that in the eyes of the learned, as well as the ignorant, those well versed in the science and practice of Medicine, as well as in those who are strangers to the Healing Art, the best criterion of truth in Medicine is nothing else than *therapeutical proof;* consequently we have endeavored to establish this proof on a fixed, evident, and incontestible principle, not subject to the vicissitudes of pathological theories—and we have found that this principle may be expressed as follows: That medication which has cured one disease, must cure equally, all analogous diseases. Whence is derived this universal and absolute precept: Treat each disease by the means whose efficacy experience has demonstrated in homogeneous cases.

Then we have shown that the rational application of this axiom rests on three conditions, whose fulfillment demand that the practitioner possess, with the scientific knowledge of his time, a consummate experience—in other words, that its rational application necessarily requires the indefinite developement of all intrinsic, as well as accessory branches of medical science. Under the impulse of such a principle, science has grown from its origin, and must continue to grow in the future.

For this reason one of our most ancient authors could say with deeply felt truth: "Medicine has long been in possession of a principle and a method, both of which it has found. With these guides, numerous and valuable discoveries have been made in the course of centuries, and the rest will be ascertained when capable men, acquainted with the discoveries of the ancients, take these as a starting point for their researches. But he who, rejecting and disdaining the past, attempts other methods and other paths, and then pretends to have found something, deceives himself, and will deceive others." *

These prophetic words have not prevented a great number of posterior authors from seeking other paths, and from proclaiming new principles. What have been the causes of this scientific revolution? What are even to-day its consequences? These are questions which I propose to examine in my next letter.

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* Hippocratic works, Treatise on Ancient Medicine.

# THIRD LETTER.

§ I. Causes which induced the Physicians to leave the Primitive Route of Pure Observation.

*Art is long, life is short, experience deceptive, and judgment difficult,* said Hippocrates, when he was about to give to the public his Aphorisms, that summary of the medical science of his time, collected by him and his associates in the temples of Esculapius during a series of centuries. This sentence, which we must regard as the scientific testament of the greatest physician of ancient times, contains the entire secret of the intellectual revolution which we are going to trace. Physicians abandoned henceforth the path of pure and simple observation, hoping to find a surer guide in physio-pathological observations, and with the view of hastening the too slow progress of the Healing Art, of avoiding the interminable and dangerous gropings of experience, and of overcoming the difficulties of diagnosis.

Indeed, the universal precept of therapeutics, given at the end of the preceding letter in these terms: *Treat every case of disease by the remedies whose efficaciousness in similar or homogeneous cases has been proved by experience;* this precept, I say, which the physicians of the primitive period had followed instinctively, presupposes the knowledge of a treatment for every morbid species, and the capacity of discovering fully the homogeneousness or similarity of diseases. Now science is yet far distant from this degree of perfection, notwithstanding the incontestible progress it has made since the time of Hippocrates. We meet in practice, almost daily, diseases for which experience has until now discovered no sure remedy. Again, it is often the case that a remedy which formerly was remarkably efficacious in certain affections, now fails in cases considered as entirely analogous to them.

In all these unfortunately too frequent circumstances, the above precept leaves the physician in embarrassment; it indicates to him in no way the conduct he should pursue. The physicians of the Empirical school of Alexandria recognized this void, and they endeavored to fill it by adding to their general rule of therapeutics a corollary, under the name of *analogism* or *epilogism*. This corollary was as follows:

### EXAMPLES OF EMPIRICAL ANALOGY.

If you meet, said these physicians, with a morbid condition for which neither your own nor others' experience furnishes any therapeutical indication, you can do nothing else in such a case than experiment. You must seek with what known affection this new one may have any analogy, and try in this case the remedies which succeeded in the former. Thus the treatment which has been employed successfully in erysipelas, might also be tried in certain tetters; so the remedy which cured a rheumatism of the arm, will, in all probability, cure a rheumatism of the leg.

They adopted the same manner of reasoning when seeking curative agents which we call succedaneous or supplementary, when the known means were not sufficient. Thus, experience having shown that the juice of the quince was useful in diarrhea, if they could not procure themselves that substance, they tried to replace it by another which had a sensible analogy to the first; for example, the juice of the medlar plant, which is analogous to the above by its sharpness, appeared to them as proper to fullfil the same indication.

The analogies of the Empirics were all founded on *sensible* and *apparent* qualities, whether they applied themselves to diagnosis or to the choice of curative agents. These analogies appeared too superficial and unsafe to the Dogmatists. These preferred seeking more radical analogies, that is to say, those founded on less superficial and more stable qualities, which they honored with the names elementary, constitutional essential, or occult qualities, etc.

### EXAMPLES OF EMPIRICAL EPILOGISM.

If a patient feels in the hypogastric region intermitting and violent pains, which are exasperated in walking or riding, but are, on the contrary, quieted by repose, if in this patient the emission of urine is sometimes suddenly interrupted for a longer or shorter period, it may be conjectured that the presence of a calculus in the bladder is the cause of all these symptoms.

Finally, if a metalic sound introduced through the urethra into this membraneous reservoir, causes the hand which directs it to feel a sensation of rubbing against a solid and ragged body, your conjecture becomes certainty, for cadaveric researches and the operation of lithontripsy have taught us that a vesicular calculus gives rise, ordinarily, to such a concourse of symptoms. Let a man bitten by a strange dog, which has immediately run away, present a few days afterward symptoms of hydrophobia, we are authorized to think that the animal was mad, although he exhibited no signs of hydrophobia at the time.

Thus we see by what use of reason the Empirics attempt to go back to morbid causes, for the moment concealed, but susceptible of falling under the senses. They named them the *occasional* or *evident* causes.

The Dogmatists were not content with the knowledge of this order of causes. They wished to penetrate the intimate mechanism of the phenomena of nature: they sought there the causes called immediate, or integral, or essential, etc.; and they pretended to establish upon these their curative indications.

The analogism of the Empirics stopped at those qualities, which are regarded as superficial, unimportant, or too mobile; their epilogism tended only to the discovery of causes foreign to the organism, whose action they did not all attempt to determine. However, these theorists rejected too absolutely the lights of anatomy and physiology. They did not comprehend that without them, diagnosis must fail in precision, in a crowd of cases; that is to say, that there is danger of considering, as homogeneous, very dissimilar diseases, and as heterogeneous affections, those which have the greatest analogies.

The Empirical system, such as it has been transmitted to us by historians, confines the human mind in a too narrow circle. Now the mind is so constituted, that it prefers to go astray in attempting to pass the limits which have been imposed to it by the Creator, rather than to remain thus contracted. In an epoch when the philosophers pretended to explain the enigma of the universe, or *macrocosm*, by speculations on the atoms, or elements, or the harmonizing forces, how could the physiologists be prevented from speculating on the motor principal of the animal economy, on the elementary humors of the human body, on the primordial causes, and the phenomena constituting diseases, on the intimate action of remedies, etc.?

This system was therefore rejected because it stopped only at gross appearances, rested on the changing ground of experience, gave no satisfaction to our natural desire to understand causes, and offered to the Healing Art no fixed and solid basis. Consequently, the primitive way of pure observation was abandoned, and they sought another route, and other principles, which seemed to guide more directly to the final aim of medical science, namely: the preservation of health, and the cure of diseases. They reasoned as follows: In order to find the best means of preserving the health and life of the body, it is necessary to know the parts of which it is composed, what elements constitute it, what forces sustain it, and what laws regulate the action of these forces; so, also, to be prepared to cure, certainly, diseases, they must be known in their mode of formation, their generating causes, and their essential

phenomena. This was the unique source, according to them, whence could be drawn the rational indications of treatment. Without this knowledge, the physician was likened to a blind man armed with a club, who strikes at hazard the disease or the patient.

Such is the argumentation, unceasingly presented, under a thousand forms, since Hippocrates, and on which physicians have based their ideas for advancing physiology and pathology to the first rank of the branches of medical science, and for placing therapeutics as secondary, as being only a deduction or corrollary from the preceding. Consult the most famous theorists of antiquity and modern times—all, or nearly all, reproduce the same arguments in terms more or less explicit.

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### §II. Consequences of this Scientific Revolution.

From the moment that it was admitted as a principle, that physiology and pathology are the basis of therapeutics—that the treatment of any disease whatever ought to be deduced logically from the idea we form of its nature, of its intimate phenomena, and of its causes—from that moment, all the researches of physicians had for their chief end, to determine the laws of life, and the nature and mode of generation of morbid affections. From that time, also, all medication whose effects could be explained according to the physio-pathological ideas of the day, was esteemed rational. All medication, on the contrary, whose effects could not be in any way explained by such reasoning, was deemed irrational or illogical, whatever might be its efficacy.

In this order of ideas, as is seen, therapeutic proof ceased to be the highest criterion of truth in Medicine, the *ultima ratio*, that may be given as a justification in the choice of a treatment. Indeed, according to these views, in practical medicine, the physiological explanation of the curative action of medicines becomes the *ultima ratio*. Such is the plan, such is the philosophy, from which have been constructed all of the ancient and modern systems of Medicine, with the exception only of Empiricism—Hippocratists, Methodists, Eclectics, Mechanists, Chymiater, Solidists, Humoralists, Animists, etc. All these medical sects, so divided among themselves, agree so far as to subordinate their curative methods to some physio-pathological idea or notion. If we pass by the extinguished theories before the end of the last century, and cast a rapid glance upon those of our age, we will be easily convinced of the truth of what I advance.

ORGANO-DYNAMISM.

Haller had published his great system of physiology; his experiments upon irritability had filled the learned world with admiration. Brown, as profound a logician as he was a superficial observer, having directed his mind upon this physiological property, believed that he could explain by it, all the phenomena of life, and establish on this basis, a complete system of Medicine. He affirmed that life itself, in health as well as in disease, is an effect of stimulation, *and of stimulation only;* that every morbid affection consists in an excess or a deficiency of stimulus; that the result of every curative action reduces itself to an increase or diminution of excitement.*

The Rasorians, adopting the same idea, did not see in any disease, but an excess or deficiency of vital force, a hypersthenia or a hyposthenia; and, in the action of therapeutical remedies, either an increase or a diminution of this force.

But they differed from the Brunonians, in considering excitability as uniformly diffused in the animal economy; whilst the disciples of Rasori considered it unequally distributed in the various tissues and organs. The first admitted only general diseases and general excitants; the latter recognised special affections, either in regard to their seat or their nature, and remedies, whose actions are manifested by preference, upon this or that organ.

Broussais, also, changed nothing in the physiological idea of Brown; he expressly acknowledges it himself. "Brown," he says, "held as an essential principle, that life is only supported by stimulants, and that to live is nothing else than to be excited. Thus far this is true. It is very evident that everything which sustains life has no other perceptible effect, to the sense of the observer, than to reanimate the phenomena to which we attach the idea of life, when they are growing feebler, and seem to tend to their extinction.

"But to draw advantage from this principle, it is necessary to study all the parts of the body in connection with the external excitants—to seek in what manner the organs excite each other reciprocally—to study attentively the effects of external and internal excitants in each of the tissues of which the organs are composed. Now this is what Brown did not do: for this mode of studying excitement is nothing else than the French doctrine, which bears the name of physiological doctrine, or, if it is prefered, physiological method." †

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*Elements of Medicine by Brown, chap. III, § 22, 23.

† De l'Irritation et de la Folie, ch. II, p. 47.

In this passage Broussais characterises with great clearness, the theory of Brown and that of his own. We see that he adopts, without any restriction, the physiological principle of the Scotchman; but that he studies the effects of excitation, not in the economy as a whole, but in each tissue—in each particular organ, after the manner of the Rasorians.

Perhaps you will inquire in what do they differ? In this that the latter consider the special action of most of external modifying agents on every part of the organism as ab-irritative or *hyposthenic*—while the French pathologist considers this same action as *hypersthenic* or irritative. Here, then, we have three logicians, each possessing extraordinary strength, who deduce three systems from the same physiological idea—whose practical conclusions are antagonistic or widely different—a curious and instructive spectacle, well calculated to render us circumspect in the application of physiology to therapeutics. Thus the French reformer attributed to his doctrine the exclusive epithet, physiological; this artifice of language can deceive no one. It is very evident that his doctrine does not derive more from physiology than the two preceding, nor more than those which we are about to consider. The only difference is that each one these systematists pretended to understand physiology better than his predecessors and adversaries.

### VITALISM.

Toward the end of the last century and the beginning of the present, one of the most vast and profound minds which has honored French Medicine, Barthez, proposed, likewise, to establish medical practice upon physiology, in a work intitled "New Elements of the Science of Man." He declares in his preface that such is his aim and hope. "Independently of its utility in metaphysics and morals, the physical science of man presents to curiosity as great an attraction as any other science; and it acquires the highest degree of interest when we see that it forms the foundation of knowledge necessary to the art of curing."* He writes, in several other passages, on the necessary union which exists between physiology and practical medicine, and he terminates with indignant expressions against those who do not partake of his convictions on this point.

Barthez admitted in the human body three orders of forces, or three dynamisms: First, a material aggregate, which obeys physico-chemical laws; second, a harmonizing force, which he calls vital principle—a force which, spread out in all parts, and residing in no one exclusively,

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* New Elements of the Science of Man. Paris, 1806.

makes them sympathize with each other, coördinates movements to a common end—the preservation of life, and acts in all things automatically under particular laws, without having conscience either of its existence or its acts; third, and finally, an immaterial principle, called soul, endowed with spontaneousness of conscience and perception, capable of influencing, accidentally, all the vital functions. The following passage may be cited among many others, where this triple dynamism is plainly indicated.

"The order of the phenomena of death in man is as follows: first, the separation of the soul from the body; second, the extinction of the forces of the vital principle; lastly, the chemical dissolution of the body. ⁂ ⁂ The metamorphosis of the terrestrial part of it is fully known, but the fate of the vital principle after death is a mystery. If this principle is but a faculty united to the living body, it is certain that in the destruction of this body, it reënters the system of forces of universal nature. If it is a being distinct from the body and the soul, it may possibly perish by the extinction of the forces of the body which it animates, or it may pass into other human bodies and vivify them by a kind of metempsychosis." ⁂

Barthez doubted the independent existence of the vital principle, distinct from that of the body and the soul, or whether it be but a modality of organized matter, a faculty endowed with motor forces, which are the necessary consequences of the material combination of which each animal body is formed.

M. Lordat, the inheritor and perpetuator of this doctrine, does not hesitate to raise this doubt. He affirms that the mysterious principle which gives impulse to the animal economy enjoys an independent existence, separated from that of the body and the soul. He consecrates to the demonstration of this opinion an entire book, under the title of *Insenescence Du Sens Intime.*

I must confess, that the school of Montpellier appears to me to be in possession of a physiological truth of high importance, which it is right not to abandon. Its doctrine on the vital principle or the harmonizing force of organized bodies, is very justly named Hippocratic. It is indeed stated in several of the writings attributed to the physician of Cos, who gives to the harmonizing force of the living organism divers names. He calls this force, according to the aspect under which he regards it, either motor ενορμον, or nature φυζις, etc. We read, among other things in the Treatise on Aliment: "Nature is equal to and sufficient for all things. ⁂ ⁂ ⁂ There is in the interior *an unknown*

⁂ Ibidem. Last chap., cccxvi and cccxvii, book II.

*agent* who works for the whole and for the parts; sometimes for certain ones and not for others. ✲ ✲ ✲ Nature is one in all, but infinitely varied. ✲ ✲ ✲ There is but one end; there is but one effort. The entire body participates in it; it is a universal sympathy." ✲

This opinion, derived from the philosophy of Pythagoras, renewed by Leibnitz, has been adopted by a large number of naturalists and physicians of all countries and all times. It appears to be generally followed in Germany. M. Müller, Professor in the University of Berlin, after having discussed it with great depth and impartiality, concludes by inclining to it. † But we do not intend to examine here how far such a doctrine is founded in physiology. We have to occupy ourselves only in regard to its consequences upon practical medicine.

Now, from the moment that we recognize in human nature a triple dynamism, to-wit: an aggregate material, a vital harmonizing force, and an immaterial essence whose determinations react sometimes on the living organism, we must admit that each one of these dynamisms reveals itself to the eyes of the observer by special functions which may be injured either separately or simultaneously. Thence result three general classes of diseases. The first class comprises the physico-chemical alterations of the solids and fluids; the second, the lesions of the vital force or properties; the third, the affections of the soul. Such is, indeed, the nosological classification indicated by M. Barthez. ‡ I do not intend to consider here the grave objections which might be raised against this classification of diseases. I pass immediately to the practical consequences which result from it, according to its author, who expresses himself in the following language: " My new doctrine on the faculties and functions of the vital principle being rigorously deduced from facts, and independent of all the systems of the different sects in the Science of Man, does not exclude any of the views which are essential to recognize, to perfect and to multiply all the methods, *natural*, *analytical* and *empirical*, which the art of curing may embrace in the treatment of the divers kinds of disease."

But let us now permit M. Lordat to explain to us what are the therapeutic methods to which he makes allusion: " The Natural methods are those whose object is to favor, to accelerate or to regulate the course of diseases which tend to a happy solution. ✲ ✲ ✲ The Analytic methods are those in which, after having decomposed a disease into its essential affections which produced it, or into the more simple diseases

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✲ Works of Hippocrates. Treatise on Aliments, §§ 3 and 4.

† Manual of Physiology.

‡ New Elements of the Science of Man. Preliminary Discourse.

which complicate it, we then attack directly these elements of disease, by means proportioned to their relations of force and of influence. * * * The Empirical methods are those whose efficacy have been established by experience, but whose immediate and primitive effects have no connection with the cure of the disease, intelligible to our minds." *

This classification of therapeutical methods is very important, and merits a profound discussion, upon which I shall not again enter here, as I have treated it fully already in the Article on Animism and Vitalism. I will add to what I have said there, but a simple reflection: How is it that Barthez, who pretends to found therapeutics on physiology, did not see that there does not exist any rational connection, any correlation which the human mind may appreciate, between his triple dynamism or his physiological ternary, and the three modes or general plans of curing above given? However, far from blaming him for having tried to render practical medicine independent of all systems of physiology and pathology, I praise him, on the contrary, highly for it. What I blame him for is, not to have been able not to render it independent of his own system, as well as those of others. He could then have established a true and lasting doctrine of therapeutics, instead of which he has only shed a ray of light on this important and difficult branch of medical science. Nevertheless, this ray of light is a service rendered to posterity, which has accepted it, and by freeing it from the shadows and errors with which it is still enveloped, will cause it to shed forth a clear and vivifying light.

### HOMEOPATHY.

No one has raised himself with more force and perseverance against all physiological and pathological systems than the author of the homeopathic doctrine. He wars against them from the beginning, in all his writings, but particularly in a pamphlet entitled, "*Value of Medical Systems;*" and in the paragraph of his Materia Medica, entitled, *A Souvenir,* he declares emphatically that Medicine is and only can be but an *empirical* science, the same as physics and chemistry.† He charges the pathologist, sometimes with creating imaginary morbid entities, purely nominal, by means of symptoms grouped arbitrarily, and sometimes with seeking the cause of the ills which afflict man in the

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* Explanation of the doctrine of Barthez, by M. Lordat.

† True, Medicine is, from its nature, simply an empirical science, and can only be based upon pure facts and sensible phenomena belonging to its sphere. * * In the purely empirical sciences, as Physics, Chemistry, and Medicine, the purely speculative mind must not be allowed any decisive influence.—*Organon, the Art of Curing.*

depths of physiological abstractions, such as the diverse degrees of lesions which sensibility, irritability, and nutrition may undergo. He attacks them with the weapons of reason and ridicule. He adjures them, in the name of conscience and religion, to renounce such errors.

Who would not expect, after so many declamations, that the founder of Homeopathy, the inventor of infinitesimal doses, would abstain entirely from all physiological explanation? that he would invoke in favor of his doctrine experience only, *pure experience*, as he incessantly repeats? Well, undeceive yourself. The whole explanation of his system is, from beginning to end, but a physio-pathological theory, a long dissertation on the essence of disease, and the intimate action of medicines. He says, for example, that diseases are but the *immaterial alterations of an impalpable vital principle*; hence he concludes that we must attack them by forces of the same kind, that is to say, by spiritual virtues of medicines.*

He asserts, for example, that two affections alike in their symptoms, but different in their essence, destroy each other when they meet in the same organism; he proves this, not by observation, but by the most subtile argument, and one of the most arbitrary hypotheses.† I will not dwell longer on this doctrine, which I propose to submit hereafter to a special examination. It is sufficient for the moment to have demonstrated by striking proofs that Samuel Hahnemann, after having stupidly reprimanded the theorists who pretend to base therapeutics on considerations drawn from physiology and pathology, falls himself into the same fault with which he reproaches others. Besides, a much more eminent physiologist, Bichat, has committed quite the same inadvertence. After having charged the influence of the physio-pathological theories as being the cause of the instability of the denominations of the Materia Medica, and of the vagueness and incoherence of therapeutics, he throws us back into the same path, by affirming that the action of curative agents reduces itself to restoring the vital forces to their natural type, from which they were diverted by disease.‡

### ECLECTICISM.

I have but two words to say here upon this doctrine, of which I shall speak elsewhere at more length. I wish to observe only, that it aspires, like the preceding, to establish its curative indications on physio-pathological views and facts. The eclectic does not accept entirely any one of the physio-pathological interpretations proclaimed by the diverse

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* Organon, sec. 53, etc. † Ibidem, § 40.

‡ General Anatomy—General Considerations, § II.

systems, but neither does he deny any one in an absolute manner. He pretends to draw from each one of them what is suitable to him, without subjecting himself to any fixed rule, and puts experience and reason in the scale in order to decide on each particular case.

But within what limits does he interrogate these two faculties, or these two modes of acquisition? This is what the Eclectic never tells us; thus he gives us no assurance that we shall not make choice of error rather than truth, of deceptive fiction rather than reality.

Medical Eclecticism escapes all general description by the absence of a common formula and a fixed symbol. The eclectics have among themselves very often nothing else in common but their names, and a decided aversion for the discussion of principles. But it is true, that far from denying the physio-pathological theories, they seek them, and endeavor to deduce therefrom their methods of treatment.

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### III. CONCLUSION.

We have seen that at an undetermined epoch in the history of Medicine a capital revolution took place in this science; that the method of pure observation had been abandoned, to follow another route, in appearance shorter, surer, and more rational; thinking that the study of the elements of the body and their properties, of the laws which govern the functions of the animal economy, and of the causes and production of diseases, would establish the Art of Curing upon a firmer basis than crude results of experience. Henceforth, there was established among physicians a general opinion, which considered therapeutics as a deduction, a corollary form the laws of physiology and pathology.

A single sect in antiquity resisted this idea, and tried to trace another plan of studies, and other rules of practice; but it perished after a short popularity; its name and its memory were for a long time held in dishonor by medical posterity. However, since the revival of letters in Europe, more than one philosopher, more than one physician of high reputation, has dared to judge this doctrine less severely.

The testimonials in favor of rational Empiricism are not wanting among the writings of the two last centuries, and these evidences become more and more numerous and imposing as we approach the present epoch. In our day a multitude of authors are animated with the spirit of Empiricism, and proclaim its maxims without rallying openly under its flag. Those who oppose it most warmly in their books, in theory, do not hesitate to take it for a guide in their practice at the bed side. There exists even in Paris an entire class of Physicians, united under the name of the "Society of Medical Observation," which has emitted

principles and method, evidently empirical, whose doctrine, though still in the embryonic state, includes in France, as well as in foreign countries, numerous adherents.* Upon the whole, there prevail at this time in Medicine, three opinions, three general methods. One pretends to deduce all therapeutical indications from the laws of physiology and pathology. We will designate it by the term *physio-pathologism.* The other affirms that no mode of treatment can be derived from physio-pathological notions in a direct and immediate manner, and draws all of its practical rules from the pure results of experience; this is the old Empiricism, which we name rational Empiricism, or *Empiri-methodism.*

The third, which derives its curative indications, sometimes from physio-pathological ideas, and sometimes from crude facts of experience is *medical Eclecticism.*

These three opinions, these three methods, are contradictory, as it is easy to see; one of them being true, the other two must necessarily be false. It is then of the greatest importance to make correct choice, for on this choice depends all the future of medical practice. To remain in doubt is impossible, at least in practice; to decide by chance in a matter which interests to such a degree the health and life of mankind, would be the act neither of a philosopher, nor of an honest man. We proceed, consequently to treat, with all the development which it merits, in our next chapter, the following capital question: *Can pathological physiology, in whole or in part, be the direct and immediate foundation of therapeutics.*

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* See first Memoir of Medical Society of Observation, 1837.

# FOURTH LETTER.

CAN PATHOLOGICAL PHYSIOLOGY BE, IN WHOLE OR IN PART, THE DIRECT AND IMMEDIATE FOUNDATION OF THERAPEUTICS.

## § I. Present state of Science relative to this Question.

I said, in terminating my preceding Letter, that three contradictory opinions are exhibited on the subject of the above announced question. The one which has for supporters the most famous modern systematists, such as Stahl, Barthez, Brown, Razori, Bichat, Broussais, and other numerous votaries, affirms that there is no rational therapeutics except what is derived from the exact knowledge of the disease, and the mode of action of curative agents. All those illustrious theorists whose doctrines have divided the medical world, suppose that pathological physiology is the only rational and necessary basis of practical medicine. All pretend to derive from this unique source their methods of treatment, and the explanation of the effects which they obtain. I call them pure physio-pathologists.

The second opinion is that of the less exclusive Vitalists, and of less pure Organics, of all those, in one word, who under divers names, practice more or less openly Eclecticism. These physicians agree with the preceding, that the knowledge of the intimate nature of maladies and the mode of action of remedies constitute, in fact, the best foundation of therapeutics. But they add, that in default of this knowledge, which too often is wanting, the crude observation of the effects of agents, or Empiricism, may serve us as a guide, and furnish us, in certain diseases, surer and more efficacious means of cure than those which are indicated by rational Medicine. They regard the physiological explanation of the action of remedies the last improvement of the Art, the final aim of the science, but they think we are still very far removed from this degree of perfection, in many cases.*

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* See, among others:

Andral—*Clinique Medicale*, second edition, preface, page 6; *Course de Pathologie Interne*, preliminary considerations.

Thirdly, and finally, there are some authors who maintain that rude experience, or pure observation of the sensible effects of remedies, is the fundamental base of therapeutics. These deny, positively, that the lights of physiology and pathology can ever become the immediate source of curative indications, or furnish a rational explanation of therapeutical effects. I have called this sect of physicians by the name of rational Empirics or Empiri-methodists.*

A general remark, to be made on all the modern writers of Medicine, to whatever category they belong, is, that they do not hesitate to resolve, or rather to settle, the great question which is the subject of this letter, but they do not bring forward any proof of the solution which they give of it. Each one of them seems to imagine that the opinion which he professes in this regard is so clear and evident that it is sufficient simply to announce it; they dispense, in this belief, with all efforts at seeking its demonstration.

However, they should all consider that this evidence is not of such a nature as to convince all minds, since there is found among their cotemporaries, a considerable number of distinguished *savans* and respectable practitioners, who profess entirely different and even contrary principles. This consideration ought, it seems to me, to shake the faith of each of these sections in their respective doctrine, and cause them to follow us in the examination of the fundamental problem above stated.

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Bouillaud—Nosographie Medceale.

Forget, Professor at Strasburg—Feuilleton de *l'Union Medecale.* 1849.

Frank (Jos.)—Innere Pathologie.

Gendrin—Traité Philosophique de Medécine Pratique. This author combats Eclecticism, nevertheless, he must be ranked among the eclectics.

Guein—Memoir sur Eclecticism in Medécine. 1831.

Piorry—Traite Pathologie Iatrique ou Medicale.

Requin—Elemens de Pathologie Medicale.

Réveillé—Parise. Etudes de l'Homme, dans l'Elat de Sànté et de Maladie.

Trousseau et Pidoux—Traite de Therapeutique et Matiere Medicale.

* We cite some authors who have professed, more or less, this doctrine:

Berard (F.)—Doctrine Medicale, de l'Ecole de Montpellier; pages 198 to 201, and 423 to 459.

Becquerel—De l'Empiricism en Medicine. Thesis for the concour of agregé. Paris, 1844.

Gibert—Fragments Therapeutique et de Medécine Pratique; 1846.

Laennec—Traite de l'Auscultation Mediate, second edition; preface, pages 25 to 31.

Louis—Memoires de la societie Medicale d'Observation, vol. I. p. 42.

Valleix—Guide du Medicin Praticien. We ought to range in the same line:

Chomel—Pathologie Generale.

Grisolle—Traite Elementaire et Pratique de Pathologie Interne.

§ II. Philosophical Axioms Aiding the Solution of this Problem.

I. Sensible objects being known to us only by the impressions they make upon our senses, the mind does not perceive anything in these objects beyond the sensations which they excite in us.

II. No corporeal operation, nor any action of the soul on its proper faculties or on its ideas, can make us conceive the acting force of the causes, or the necessary connection they have with their effects.

COROLLARY.

In the succession of natural phenomena, there is nothing which presents the idea of causality, or the necessary connection of cause and effect. But, when a succession of phenomena is constant, the human mind, which observes it assiduously, and which often may foresee it, is forced to believe that these phenomena succeed each other because they are linked together. A ball, for example, thrown on a horizontal plane, strikes another ball which was in a state of repose; this latter moves immediately in its turn. The impulse of the first will be regarded as the cause of the movement of the second; however, the mind does not perceive any necessary connection between these two phenomena, but their constant succession, which is manifested each time that we seek the proof, forces us to believe that these phenomena follow because they are connected. *This is an empirical truth and certainty.*

The two axioms above, and the corollary which follows them, ought to be regarded as incontestible principles, since they conform to the doctrine of all the modern philosophic schools on this matter. We can easily find its substance in the writings of Bacon, Locke, Hume, and Condillac, for the sensitist or empirical school;* in those of Thomas Reid and his disciples, for the Scotch school, called school of common sense;† in these of Kant, for the spiritualist or rationalist school;‡ finally, in those of M. Cousin and his numerous followers, for the eclectic school.§ To these authorities we must add that of Barthez, whose doctrine, though now half a century old, still prevails in spirit in the University of Montpellier;‖ and that of M. Buchez also has put forth very recently, on medical

* Bacon de Verulam.—Organum Novum, Liber I, chap. 1. Locke, Philos Essay on the Human Understanding, lib. IV, ch. III, § 16 and 26. Condillac, Essai sur l'Origine des Connaissances Humaines.

† Inquiries on the Human Understanding.—*Th. Reid.*

† Critik der Reinen Vernunft.

§ Cours de l'Histoire de la Philosophie Modern.—*Cousin.*

‖ See different passages of Nouveaux Elemens de la Science de l'Homme.

and historical studies, some new and profound views. According to him, the aim of science is to foresee, and there exist two degrees of foresight: the first consists in the knowledge of the order of succession of phenomena; the second, in the knowledge of the law of generation of these phenomena. Two conditions are indispensable, in order that we may arrive at the knowledge of the order of succession of phenomna: First, *that the phenomena of the same order and same nature follow each other always, according to a constant unknown but invariable law;* second, *that the entire succession of these phenomena has been observed once at least in its whole extent.* This being stated, our philosopher examines the degree of foresight which each branch of the human encyclopedia appears to have attained, and he uses the following language on the subject of physiology: "In the sciences of organized bodies, scientific foresight is reduced every where to the knowledge, yet incomplete, of the order of succession of phenomena. This is especially so in Medicine, for whether you study the development of a pathological modification, or observe the order in which the phenomena succeed each other, to constitute a morbid affection, or whether, finally, you analyze the successive effects engendered by the introduction into the animal economy of a therapeutical agent, your only aim is always to find out the order in which the phenomena of a determined nature succeed each other, so that in similar successions you may subsequently encounter, you may be able to foresee what is to follow by means of what has already taken place. Scientific foresight will always stop there, until the general formula of the organized bodies shall have been found."*

In presence of such a mass of eminent testimonials, scepticism becomes impossible. A doctrine which has obtained the assent of so many philosophers in other respects so divided, could not lead us into error. We may well therefore rely with confidence upon it, in order to resolve the important and difficult problem announced at the head of this letter.

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III. REPLY TO THIS QUESTION: CAN PATHOLOGICAL PHYSIOLOGY BE, IN TOTALITY OR IN PART, THE DIRECT AND IMMEDIATE FOUNDATION OF THERAPEUTICS?

It is easy to see that this question amounts to the following: Knowing the series of phenomena which constitute a morbid affection, can we

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* Introduction a l'Etude des Sciences Medicales, premier lecon.

deduce from it, *a priori*, the knowledge of the successive effects which will result from the intervention of a new force (a therapeutic agent) in the midst of these phenomena? Our reply to the question thus stated is not doubtful, if we remember our philosophic axioms and the commentary of M. Buchez. No, we say, no, it is not possible that the knowledge of a succession of morbid phenomena can enable us to foresee the changes which a curative agent will introduce into such succession, before these changes may have been observed at least once.

The lights of pathological physiology, to whatever degree they may have attained, can never give us the foresight of the effect a therapeutic agent must produce in the animal economy, before these effects have been directly observed. From which it follows that the indications which flow from physio-pathological knowledge on the opportunity of a treatment, are reduced to simple conjectures, before that treatment has been tried once at least. It is not until after a first trial that the veritable foresight, or in other words, science begins. *Thus the physio-pathology can not be in any case the direct and immediate foundation of therapeutics.*

There are some examples which will prove and confirm the truth of this answer to the minds of those persons who do not distrust absolute and abstract principles, in consequence of the abuse which has been made of these principles. But in order not to leave in their minds any cloud, or any motive to doubt, I will take these examples from the very authors who are of a contrary opinion to the one I have emitted. I shall have on this point but the embarrassment of a choice, for it is now the custom among our writers in Medicine to establish the curative indications on physio-pathological facts, rather than upon the crude observation of the sensible effects of medicines.

Read most of the treatises on Medicine which have been published in the last half century, and you will find but few in which we can not distinguish two kinds of therapeutics.

One they call rational, founded on the physio-pathological ideas of the day; the other they name empirical, or irrational, founded on the common observation of the effects of remedies. The writers who establish such a distinction, announce thereby that the choice of a remedy is in their eyes not sufficiently justified by the experimental notion of its efficacy; and a treatment merits the title of rational only in proportion as it can be shown in virtue of what physiological modification it effects a cure. In a word, it is the knowledge of the intimates modification produced by the curative agents which constitutes, according to these authors, the rationality of therapeutics, the supreme perfection of the Art.

One of our cotemporaries, whose opinions are distinguished by clearness and exactness, expresses himself in the following language on this subject: "*Medicine is rational* whenever it bases the employment of any remedies on the consideration of their physiological effects. The indications of these remedies are found by a process of reasoning in which the physiological effects are the principles, and the therapeutic effects the conclusion. There is a logical connection between the latter and the former."

"Second. Medicine is *empirical*, not in the bad sense of the word, but in all the dignity of its etymological sense, whenever the remedies it prescribes have for reason, not a physiological deduction or induction, but clinical experience only. Without doubt, physicians may seek, when the utility of an empirical remedy is well observed, to explain it by physiological theories more or less plausible, as on the other hand they seek to demonstrate by the evidence of experience the value of rational remedies; for reasoning and experience ought naturally to tend to unite themselves in the precepts of the Art. But, in a last analysis the distinction of therapeutical remedies into rational and empirical is always fundamentally true.

"But how will the practitioner reply, for example, when he is asked, on the one hand, why he purges a man who is constipated, and on the the other hand, why he purges a man attacked with lead colic? To the first question he will reply, *rationally*, I purge to evacuate the fecal matter. To the second question he will reply, *empirically*, I purge because purgation cures lead colic."

Such is the argument which I extract literally from a treatise on Medicine which is now being published.*

For myself, the more I examine and compare the two answers quoted in the last passage, the more I find them identical, that is to say, equally rational and equally empirical. Indeed, when a person answers, I purge in order to evacuate fecal matter, is it not equivalent to saying, I administer such a remedy because experience has taught me that it relieves constipation? And again, when one answers: I purge to cure lead colic, does he not say as much as, I administer such a remedy because experience has taught me that it cures lead colic?

In the first case, as in the second, you have nothing else but an experimental notion of the therapeutical effect. How do you know, for example, that the powder of jalap will provoke the evacuation of fecal matter? By clinical observation. How do you know that the same

* Elemens de Pathologie Medicale; par M. Requin, t. I, p. 250, 121.

substance will quiet lead colic? Equally by clinical observation. Why then do you call the knowledge of the first effect *rational*, and that of the second *empirical?* To this you cannot answer by subtilties and the quibbles of the sophist; or rather, your enlightened reason, directed by the philosophic axioms above given, will force you to agree that you have established an erroneous distinction between facts of the same order.

Let us see other examples of pretended rational Medicine. Perhaps they will sustain an examination better than the preceding: "In clinical surgery," says the honorable M. Bouillaud, "cases are not rare where rational therapeutics is employed. Indeed, to reduce a luxated bone by bringing into play muscular action in an inverse direction to that which produced it; to extract, either by a bloody operation or by lithotrity, a stone from the bladder; to dilate strictured canals or to make a substitute for them by artificial means; to ligate a wounded artery, etc. etc., these are purely rational therapeutical proceedings." *

In order to judge in what respect the last examples which we have cited merit the title of rational, I beg the reader to remember the corollary of our philosophical axioms. It is as follows: "A ball thrown on a horizontal plane, strikes another ball which is in repose; this latter moves immediately. The impulse of the first will be regarded as the cause of the movement of the second. However, the mind does not perceive any necessary connection between the two phenomena; but their constant succession, which manifests itself every time that we renew the experiment, leads us to believe that these phenomena succeed each other because they are linked together. *This is empirical knowledge and certainty.*" Well then, I again ask, what difference is there between the proceeding of the player who moves one ball by the other, and that of the surgeon who reduces a luxated bone by bringing into play the muscular forces, in an inverse direction to that of the forces which produced the luxation? Absolutely none. The processes are the same, and the certainty exists in the same degree. But remember the fright of Ambrose Paré, during an entire night, when he had ligated an artery for the first time in order to arrest hemorrhage after an amputation, and then tell me if this proceeding, which appears to us to-day so rational, was judged so then by that celebrated surgeon?

We conclude from this, that the surgeon who reduces a luxation or ligates an artery, conformably to the rules of his art, does not act with

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* Essai de Philosophie Medicale, p. 309.

more reason than the physician who administers a suitable dose of sulphate of quinine to a person attacked with intermittent fever, or he who vaccinates a child to protect it from small pox. The actions of both are based upon a perfectly rational, methodical Empiricism. If so many men imagine that they perceive with spiritual eyes, or seize mentally the logical connection which unites the act of the surgeon with the effect which results from it, while they avow that they cannot perceive any rational connection between the act of the physician and its result, it is because in the first case they are deluded; they are dupes of that faculty of the human understanding which Mallebranche called *folle du logis* (imagination) as Barthez explains very well in the following passage: "The principle of motion of which the laws are most simple, is the force of impulse. The action of this force seems easy to understand, because the imagination considers motion as a being which may communicate itself to bodies brought into contact by a shock, although it cannot overleap any intermediate space. However, from the moment we set aside this false view of motion, the force of impulse, however simple it may be, remains incomprehensible, as well as the forces of nature which follow the most complicated laws." * M. Cousin develops the same doctrine in terms not less explicit. †

Hence we conclude that physicians who hope to found their curative indications on physio-pathological facts are deceived by illusions of their imagination. There is no connection perceptible to our mind between the idea of a disease, however complete it may be supposed, and the determination of the curative agent applied to this disease. In other words, the series of phenomena which constitute a pathological state cannot in any way enable us to foresee the succession of effects which will result from the employment of this or that mode of treatment, before its effects have been observed at least once. Finally, there exists between physiology and therapeutics a solution of continuity, a *hiatus* which the human mind can overleap only by the aid of clinical experience, or, in other words, by empiricism.

However paradoxical this doctrine may appear to a large number of my readers, it is not, however, new. It goes back, on the contrary, to the infancy of the Art. It presided over its first acquisitions. It is clearly designated in two books of the Hippocratic collection, as well as

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* Nouveaux Elements de la Science de l'Homme, chap. III, tome I, page 49.

† Cours de l'Histoire de la Philosophie Moderne. Edition 1846, tome I, pages 247, 268.

in other writings, both ancient and modern, from which I have elsewhere quoted extracts.

But, as in a subject so delicate and important we cannot multiply too much the proofs and explanations, no one will find fault, I think, when I add some other fragments of cotemporary authors. "If by *motives*, we understand," says M. Louis, "that any remedy whatever ought not to be employed but when we have recognized that a patient is in the situation in which this remedy has already succeeded, I understand, and I agree with this view—it is nothing else than experience applied to therapeutics. But if we understand by motives, as by indications, *a priori* considerations, this view is quite hypothetical; it enters into so called rational medicine, experimental medicine, to which we have recourse only when in want of a better system, when experience has not yet spoken; and I reject it with all my powers."*

Hahnemann, desiring to demonstrate that nosography could not guide us in the choice of remedies, expresses himself thus: "In general, all science whatever can judge only the objects belonging to itself. It is foolish to expect from it instruction on subjects belonging to other sciences. * * * No matter how necessary it may be to the agriculturist to know exactly the form of plants, and to know how to distinguish them from each other by their exterior parts, nevertheless, botany, which teaches him these things, can never teach him if any vegetable is fit food for his sheep or hogs; it will never enable him to know what kind of grain or roots gives most strength to the horse, or fattens cattle best. Neither the systems of Tournefort or of Linnæus, nor the method of Haller or Jussieu enlightens him on this point. He only acquires the knowledge which he needs, by comparative experiments, made with care, on different animals."†

Again, the historian of the medical doctrine of Montpellier, Berard, says that "Sauvages, frightened by the uncertainty of hypothesis, adopted a paradox which will scandalize, without doubt, the systematists of all tmes, but which will appear, nevertheless, incontestible to the physiologists of all sects, whenever their particular opinions are not in question."‡ Physiology, according to him, connot serve as a primary, fundamental, and unique basis for practical Medicine.

The same historian, after having exposed at great length the scientific economy of Empiricism, sums up his opinion on it as follows:

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* Memoires de la Societe Medical d'Observation, tome I, page 42.

† Traite de Matiere Medicale. Prolegomenes, tome I, page 23, trad de Jourdan.

‡ Doctrine Medicale de L'Ecole de Montpellier: edition de 1846, page 47.

"Empiricism is the most profoundly elaborated system which has ever appeared in Medicine, and merits the most to be studied with care; it is the one whose contemplation promises to the philosophic mind the most useful and fruitful results, and can serve best in the research of proper methods to satisfy the future progress of the science." *

## § VI. Conclusion.

We have now arrived, basing all we have said on philosophic axioms universally admitted, to the demonstration, henceforth immovable, of this great truth: Neither physiology nor pathology, whatever development they may acquire, can ever serve as a primary and immediate foundation for therapeutics. There is, and there always will be, between the knowledge of a disease and the determination of the appropriate treatment, an interval, a void, which the human mind can fill but by the aid of experiment.

By this demonstration we have set aside, not only all the systems of Medicine known until the present time, which are derived from some physio-pathological idea, but all those also, which any one can be tempted in the future to extract from the same source. We have reëstablished practical medicine upon a true and primary basis—clinical experience; not that blind and limited experience of the first age of the science, but an analytical and learned experience, which, collecting with equal care the old traditions and new acquisitions, elucidates them both in the light of a severe critic.

Nevertheless, it is not sufficient to have recovered and set forth the true foundation of therapeutics; it is still necessary to demonstrate that upon this foundation we can and ought to raise the entire scientific edifice of Medicine. It is necessary to prove that, far from rejecting, as has been believed for a long time, the lights of anatomy, physiology, pathology, physics, chemistry, and, in a word, all the branches which are connected with the medical encyclopedia, rational Empiricism, or *Empiri-methodism* is the only one of all the systems which uses them appropriately, and circumscribes them in their legitimate bounds. It is necessary to demonstrate that it is the only system which offers to the practice of the Healing Art an immovable basis—and yet sufficiently accommodating to receive all ulterior improvements; that it is the only one which does not reject, *a priori*, any means of treatment—neither doses excessively small, nor imponderable fluids, from whatever source they may come; that it demands of the most extraordinary thera-

* Doctrine Medicale d'Ecole de Montpellier; edition 1836, page 424.

peutical processes, in order to open to them the sanctuary of science, only the sanction of reiterated proofs, serious and sufficiently constant in their results. It is finally necessary to prove that Emperimethodism is the only one of all the systems of Medicine which resolves in a satisfactory manner, this great problem, declared insoluble even in our times, by men of high reputation: "*The harmony of science with art—of theory with practice.*" *

But before undertaking this demonstration, it is useful to refute specially some more recent medical doctrines, which might deceive a large number of our readers.

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* Consult, among other writings proclaiming the insolubility of such a problem, the feuilleton of the *Union Medicale*, from p. 24 to 27. February, 1847.

# FIFTH LETTER.

## ON ECLECTICISM IN MEDICINE.

### § I. Origin of the New Eclecticism in Medicine—Its Difference from Eclecticism in Philosophy.

No sooner has a philosophic doctrine obtained any celebrity than it is reflected in Medicine. This is a fact that the history of our science confirms at each step, and of which the new medical Eclecticism offers one more sample. It is about thirty-five years since a young professor of philosophy began his teaching by a kind of protestation against all systems of metaphysics which derive from a single faculty of the human understanding, all the acquisitions of science. He tried to demonstrate, contrary to the general opinion of the French philosophers toward the end of the eighteenth century, that Sensitism or Empiricism show us only one side of things—the material or sensible side—and developes in us but a single order of ideas—the contingent ideas.

He proved equally, that Spiritualism, or pure Rationalism, shows only another side of things—the immaterial, or the one imperceptible by the senses—and produces in us but a single order of ideas—the necessary and universal ideas. M. Cousin has always continued in this path, and by his influence Eclecticism has become, in France, quite a fashionable doctrine.

About the same epoch, a professor of Medicine at the military hospital of Val-de-Grace put forth a system in which all diseases are represented as an effect of irritation, as a simple mode or a transformation of phlogosis. This system, owing to the favorable disposition of the minds of the profession, advantageously prepared by the philosophy of Condillac and of Cabanis, who also considered all the acts of the understanding as a result of transformed sensation, took a rapid growth, and in less than ten years became common in France, and spread over Europe. But while the physio-pathological system of Broussais reached with so much promptitude the zenith of its renown, a doctrine more modest raised itself slowly by the side of it, and began its ruin.

Medical Eclecticism, the emanation of philosophic Eclecticism, had already protested against the pretention of deducing all the morbid phenomena from a single lesion. It collected, by the aid of clinical observation, pathological anatomy, and chemical analysis, a mass of proofs before which fell, very soon, the brilliant edifice of the professor of Val-de-Grace. This result is now consummated. For some years past the greater part of our writers in Medicine profess an avowed or tacit Eclecticism, as we have seen in the preceding letter.

All have renounced the idea of connecting the innumerable anomalies of the living organism with a single primitive modification. It is, then, essentially important in the present medical generation, to be fixed on the value of Eclecticism in Medicine. It is for this reason that we have believed it our duty to submit this doctrine to a special examination; and, in the first place, we intend to find out in what Medical Eclecticism differs from philosophical Eclecticism, a circumstance which does not appear in anywise to have entered the minds of our Medical Eclectics.

Philosophy, embracing the entire circle of human acquirements, admits, generally, of two modes of acquisition, known under the names *Rationalism* and *Empiricism*. The first consists in establishing evident principles, or axioms, and deducing consequences and particular applications. This is the process of *deduction*. This mode of acquisition, called very improperly, by certain authors, the synthetical method, is more especially used in mathematics, metaphysics, morals and dialectics. The second mode consists in studying at first particular facts, and abstracting what they have in common, in order to form generalities or communities, which are named, also, principles and axioms, because these generalities, once established, guide us in the research or production of other particular facts like the first. This is the method of *induction*. This mode of acquisition, called, sometimes, wrongly, the analytical system, is employed in preference by naturalists, natural philosophers, chemists, physicians, etc. In Rationalism, the principle governs, is fixed; the fact is subordinate, variable. In Empiricism, on the contrary, the fact governs, and it must be constant, and well determined; the principle is subordinate, variable.

We may conceive, from this succint *exposé*, that the philosopher can, and ought even, to be an Eclectic in respect to methods, that he ought to give the preference sometimes to one, and sometimes to the other, according to the order of facts he contemplates, and that he will do wrong in adopting one exclusively, on all occasions. The physician, on the contrary, cannot be an Eclectic, since he has no choice to make in this respect. The method which he ought to employ habitually, is

fully indicated by the order of facts he cultivates. These facts arising from sensation or observation, he ought then to have recourse to the Sensitic method, otherwise called the Empirical or Inductive. Eclecticism in Medicine cannot then consist, as Eclecticism in philosophy, in the choice of this or that mode of acquisition. Eclecticism in Medicine is more confined; its object is entirely special, as we shall see from the exposition which will be made shortly. But before entering on this exposition, it was necessary to establish the capital difference between philosophic Eclecticism and medical Eclecticism, so that, in the end of our discourse, no one may apply indistinctly to the former, whatever we shall say for or against the latter.

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### § II. On Eclecticism in Pathology.

It has been said many times, and we cannot repeat it too often, that Eclecticism is a doctrine so vague, so undeterminate, and so variable, that no one has dared until the present time, to give a complete dogmatic exposition of it. I do not know of but one serious attempt of this kind; it was made by one of the most eminent medical writers of the periodical press. M. Jules Guerin addressed, in 1831, to the Royal Academy of Medicine, a memoir, in which he treated exclusively of Eclecticism in pathology; at the same time, he promised a second, in which he would treat of Eclecticism in therapeutics; but this one has never yet appeared, and according to all appearances, it will never see the light of day.

However this may be, we are happy in possessing the work of M. Guerin, by the aid of which, it will be possible for us to seize this protean and parasitic doctrine, which lives by borrowing, having produced nothing until the present time, in itself, but an individual critic, more or less independent and arbitrary. This is the opinion of the author himself whom we have cited, and it is to put an end to this sterile anarchy of Electicism, to constitute it dogmatically, that he prepared, he said, his memoir, the first of a series of other works which would have the same aim.*

Consequently, the first thing that M. Guerin proposes to decide, in order to raise the scientific edifice of Eclecticism, is the instrument or method by means of which the Eclectic can discern the true from the false, the real from the hypothetical, among the facts and opinions which are furnished by other systems. Now, this writer arrives, by a

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* Memoire sur l'Electisisme en Medecine, par J. Guerin, page 2, 23, and 26.

series of considerations, to the conclusion, that the supreme criterion of the Eclectic in the selection of his materials, is nothing else than experiment. From which it results, according to his avowal, that Eclecticism confounds itself with Empiricism, in respect to method.

Some persons have said, he says, and others may still say, that Eclecticism, as thus determined, is only the experimental method, applied to Medicine, and might ask, why change the name of this method? Why call Eclecticism by that which could be more clearly designed under the name of Experimentalism? I have a peremptory answer to make to this objection.

I will give this answer textually: "Empiricism is, properly speaking, the chaos of science; I may dispense with showing its insufficiency. Empiricism stops at those facts which are the most material; it does not regard either the coördination of facts, or the explanation of the laws which produce them; consequently, it rejects science. Its observation is isolated in the individuality of each disease, no regard being had to what is expressed by its general relations. However, if it does not seek analogies, if it neglects differences, its observation, instead of being analytical, is superficial and general, and although it does not approach facts with preconceived ideas, it sees only an obscure totality, and its experience is of no benefit for the future."

When did M. Guerin find that Empiricism does *not require either coordination of facts, or science; that it does not seek analogies; that it neglects differences, etc.?* Is it in the writings of the ancient or modern Empirics, that he has collected such maxims?

Have not the ancient Empirics established excellent precepts to discern morbid species? Are not their symptomatic assemblages the most reasonable, so far as pathological descriptions are concerned, which antiquity has transmitted to us? Now how could any one range diseases into classes more or less natural, without taking into account their analogies and differences—without analysing them?

As to the modern Empirics, it suffices to observe, in order to absolve them from the incredible accusations with which they have been charged in the description above, that it is in accordance with their principles, as proclaimed by Sydenham, that most of our nosologies are composed.

By this portrait of Empiricism who could recognize the learned system of which Baglivi has spoken: "That it is the fruit of method elevating itself to the highest truths by the attentive and persevering observation of phenomena; that it has obtained in all times the approbation of distinguished men, who were forced to enlarge it, as a mode of acquisition conformable to our nature."*

* De Praxi Medica, Lib. I., cap. 11.

Could you recognize it yet as that system which Berard, the historian of the doctrine of Montpellier, regarded as *the most profoundly elaborated that has ever appeared in Medicine.* Could you recognize in it the philosophic method which, according to M. Cousin, Bacon, Locke, Hume and Condillac have developed?* No, certainly not. Empiricism, such as is represented above, is neither a system nor a method; it is, to make use of the language of M. Bouillaud, "I know not what, which has no name and does not merit our attention here."

M. Guerin is perfectly right in rejecting, with all his powers, an empiricism so gross, and so anti-methodic as that which he has painted for us. But is it loyal, is it worthy for a mind so elevated as his, to travesty thus the opinions that he wishes to refute? Such was doubtless, not his intention. He has been led by the habit which we have all contracted, in our medical education, of considering empiricism but from its bad side, and in its lowest representatives; a habit which makes us confound, sometimes, scientific Empiricism or Empiri-methodism, with something which has no rank in science; the charlatanism of the mountebank, ignorance, the denial of all kinds of reasoning, of all theory, of all methodic co-ordination.

What proves that he has acted in this way, is that the author of the memoir in favor of medical Eclecticism, wishing to characterize a little more his method, and to render it unlike those of other systems, expresses himself in these terms: "The observation of Eclecticism is seperated equally from the passive neutrality of Empiricism and the partial activity of systems. *It applies the experimental method to each fact; that is to say, it notes successively all the elements of the facts, accordingly as they are produced, and in the order that they are produced.*" †

For myself, I confess, the more I study the method counseled and described by M. Guerin, the more I find it identical with that of Empiricism. I see no difference, absolutely, but in name.

It remains to ascertain which of the two appellations is the most exact, his or ours. In this respect I believe that M. Guerin has himself decided the question, in giving to his method the epithet *Experimental,* synonyme of empiric. At the most, I felicitate myself in not disagreeing with him, but in the meaning of a word. When we have reached this point we are not far from understanding each other.

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* See our Fourth Letter.

† Essai sur la Philosophie Medicale.

## §III. On Eclecticism in Therapeutics.

Eclecticism in therapeutics consists, as we have said elsewhere: First, in not admitting any universal principle of treatment; second, in deducing the curative indications, either from physio-pathological theories, or from pure experimentation.

Now, we have proved in the preceding letter that it is impossible to deduce any rule of cure directly from pathological physiology. Consequently, we might dispense with a more ample emamination of Eclecticism in therapeutics; because, whoever has followed our argument must have seen that this doctrine is fundamentally erroneous. But there are so many varieties of eclecticism in Medicine that this refutation *en masse* does not suffice; because a great many theories, thoroughly eclectic, are produced under other denominations, and every one does not perceive at the first view the connection which exists between the most elevated principles of science, and their remote consequences. Moreover, this doctrine is the most fashionable one of the present day, and in this view merits still on our part a special examination.

I choose designedly, for the immediate object of this discussion, one of the most recent and most remarkable specimens of modern Eclecticism, the introduction to the *Treatise on Therapeutics*, by MM. Trousseau and Pidoux, third edition. No one, I hope, will accuse me of considering Eclecticism in its lowest representatives. The fragment of medical philosophy which I have just designated is really an eclectic production, although its authors do not say so; but I judge it by the maxims which are emitted in it, and the spirit which pervades it from the beginning to the end.

Indeed, after a rapid description of the revolution that the experiments of Haller on irritability of the tissues first introduced into physiology, and consecutively into therapeutics, after a succinct discussion of the principal doctrines which have prevailed since the time of Cullen till our day, these authors begin the explanation of their own theory, of which I will give the following resumé: There exists a class of diseases arising from a simple exaltation or depression of the vitality of the organs. These diseases have no real specificity, and do not differ from each other but in their seats and degrees of intensity. They are not diseases, properly so called, they are *accidents*, purely traumatic lesions. In these kinds of affections there is no necessity for the resources of the Materia Medica, properly so called; the resources of hygiene are sufficient. In this numerous class of diseases, the curative indications ought to be drawn from physio-pathological ideas.

There is another class of diseases whose specificity is not doubtful. Each one of these constitutes in the organism a distinct entity, leading

in some sort a particular life. These are diseases truly *essential*, as syphilis, marsh fever, small pox, etc. Against this class of affections the resources of hygiene are insufficient; we cure them only by the aid of special agents. In these cases, the lights of pathological physiology furnish us but imperfect indications; pure experience or empiricism guides us more surely.

Such is the doctrine comprised in substance in this essay of medical philosophy. We read in it that *the principle of general therapeutics, the sovereign law of good practitioners*, consists "in the idea of subordinating to the medication of the symptom that of the morbid unity, when this latter is not well determined and sufficiently specific to govern all the other indications; and to subordinate, on the contrary, the medication of the symptoms to that of the nature of the disease, when this latter possesses such unity and such specificity that none of its parts or its symptoms can be detached from it, and each one of them represents and manifests it as well as the whole."*

All this is not very clear, but by the aid of the antecedents we may nevertheless satisfy ourselves that the authors of this article have wished to avail themselves of physio-pathologism and empiricism. They think that we should take from physio-pathology the therapeutics of the first class of diseases, and from common experience the therapeutics of the second class. This is, as any one can see, pure Eclecticism, if any thing ever was. It remains to know how we may know if a morbid case belongs to one or the other of these two nosological classes. It is not easy to solve this question in a large number of affections, even the most simple. Let us take, for example, venereal chancres, situated on the external organs of generation. Before laying down a treatment appropriate to this lesion, it will be necessary to decide if it is of a physiological nature, or of a special essence. Now, if you interrogate a partisan of Rasori on this point, he will answer by saying that you must treat ulcers with hyposthenia, or, in other words, by lowering vitality. If you consult a follower of Broussais, he will affirm that you have nothing before you but a product of ulcerous irritation, or an exaltation of vitality. Another theorist will see in it a particular virus, or an *essential* affection. By what rule, I demand of the authors of this philosophic pamphlet, by what criterion do you make your final choice? You have nothing else than the therapeutic proof, that is to say, Empiricism, which you have endeavored to avoid, and which you have previously condemned.

But if *your sovereign law* can not guide us in a case so simple as the

* Page 28.

preceding, of what aid will it be to us when we have to deal with some of those complex affections which we encounter frequently in practice, such as typhoid fever, cholera, scrofulous affections, etc.? With such a guide, we must stumble at every step against some insoluble difficulty. You have foreseen this, and stated it in formal terms, when you say: "We do not know any disease which may not have a certain unity, and may not be distinguished from every other by something special. ⁂ ⁂ ⁂ ⁂ Just as we know no disease which does not remain subject to the laws of the economy, and which does not consequently present some physiological indications."*

Thus your *sovereign law of good practitioners*, which is based solely on the distinction of diseases of a special nature from diseases of a physiological nature, according to your own confession, crumbles to its very foundation. I will not stop to discuss the axiom *of contraries*, although you assert that it is at the present time better demonstrated than ever before.† It is a subject of which I have disposed elsewhere, in such a manner that I have no need to return to it. But what astonishes me in the last place is, that you declare afterward that no one can base the Materia Medica, in the present state of science, upon a general idea.‡ Is in your opinion the axiom of contraries no general idea? And *your sovereign law of good practitioners*, is it not, either, a general idea?

Thus you see the inconvenience of having no fixed, determined principle; you are drawn necessarily into contradictions from which all the talent in the world cannot extricate you. The philosophic medical essay of which I have just given you a short and incomplete analysis, offers us a remarkable example of this defect. Notwithstanding the incontestable sagacity and talent of these authors, and the profound study which they have made of the vicissitudes of therapeutics, within half a century, the absence of a fixed and avowed principle gives vagueness, indecision, and obscurity to the whole of their work.

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### IV. Conclusion.

Eclecticism in Medicine, whether considered in its foundation or in its details, is a doctrine proven to be sterile, and which, under the pretext of holding an equal balance among the various systems, acts only as a poor amalgam without fixed proportions. It is an individual criticism calculated at most only to destroy some errors, but incapable of establishing anything stable; unable, in short, to create but doubt and uncertainty; a doctrine essentially transitory, which must disappear in

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* Page 28. † Page 53. ‡ Page 70.

the presence of the true theory, as the shadows of twilight are scattered before the beams of the rising sun.

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## ON HOMEOPATHY.

### PRELIMINARY CONSIDERATIONS.

"The time has gone by," truly remarks the translator of the works of Hahnemann, "when the pleasantries relative to the infinitisemal doses can be regarded as good arguments against homeopathy."* We are certainly compelled to take this doctrine into serious consideration, since men commendable by their scientific titles and medical position, members of faculties, hospital physicians, and eminent practitioners, have embraced it and become its public defenders; since journals have been established and societies instituted in different countries to make public its principles and practice. Before this invading propaganda it is not permitted to any man clothed with the medical priesthood, and comprehending the dignity and importance of his ministry, to remain indifferent; it is necessary for him to take a part for or against it, and how can he take a part in so grave a question without a preliminary and searching examination?

I regret that no one of our academical dignitaries or teachers have charged themselves with such a work; it would have been more perfectly accomplished, and especially more authoritative than my effort. Unhappily, none of our distinguished teachers have deigned or dared to enter the list openly for a combat with the partisans of this new gospel. It is true that a long time past, some experiments were made, but these experiments, now almost forgotten, should have been resumed on a grander scale by different therapeutists; for it must be avowed that the negative results published by M. Andral, or any other experimenter, whoever he may have been, can not nullify the mass of positive results that the homeopaths pretend to oppose to them.

Moreover, what can we answer when they say to us, your so-called rational Medicine only treats more or less subtily on the evils of humanity, but it does not teach you at all how to relieve them. The most efficacious means possessed by the Healing Art, *specifics* which according to common consent procure the mildest, promptest, and most durable cases, your official medicine proscribes as much as possible; it excludes them from its theory, if not from its practice. We, on the contrary, come to teach you a means to discover, and a method to employ these

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* Jourdan. Preface to French translation of the Treatise on Materia Medica.

admirable instruments of cure. What have we to respond to such an argumentation? Nothing, absolutely nothing serious and logical.

There is not one among the old doctrines, except rational Empiricism, which is not embarrassed by such an objection, because rational Empiricism, or Empiri-Methodism, is the only one of all these doctrines which, far from excluding from its theory a treatment by specifics, admits them on the contrary, to the first rank of curative methods, called rational, as may be seen in the article on Therapeutical Methods in the Reform Period, and which will be again referred to in its appropriate place.

Since our masters have not entered into a struggle with the apostles of Homeopathy, but have left their disciples as well as the public without a guide, and without defense against the attractions of this novelty and the deceitful promises of these innovators, I, though an obscure champion, but confident in the principles which I have adopted, will open the conflict, by exploring to its most minute elements, the Homeopathic code.

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## Philosophical, Physiological, and Pathological Doctrine of Hahnemann.

### PHILOSOPHY.

"The mind is not able to recognise any thing *a priori*; it cannot form in itself a notion on the essence of things, their causes and their effects. Whenever it has to pronounce truths in regard to real objects, each of its propositions must be founded on sensible observations, on facts and experience. In going a single step from the path of observation, it is at once plunged into the illimitable spaces of imagination and arbitrary hypothesis, parents of false opinions and of nothing absolute."*

These are maxims which a pupil of Condillac cannot disavow. They are, indeed, only a commentary of the famous axiom of the Sensitist or Empiric school: *all our knowlege comes from the senses;* an axiom which I accept not as of universal application, but limit it to physical sciences, of which Medicine is one of the most eminent. Thus, then, I am in harmony with the pontiff of Homeopathy, on the source of our lights in Medicine.

### PHYSIOLOGY.

"That which unites the living parts of the human body in such a manner as to make it an admirable organism, that which determines them to harmonize in a manner so directly contrary to their primitive

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* Organon De l'Art de Guerir, preface, 2d edition, French translation of Bra_non, p. 40.

nature, physical or chemical, that which animates and impels them to such surprising automatic actions, that fundamental force, in fine, cannot be represented as a distinct being; it can only be understood imperfectly; it escapes all investigations, and all our perceptions. No mortal can know the substratum of vitality, or the disposition *a priori* of the living organism. No mortal can sound the depths of such a subject, nor even describe its shadow. Let them speak in prose or verse, human language, in this respect, can only express chimeras or nonsense.

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"Consequently, all that a physician can know of his subject, the living organism, is limited to what the sages among us, a Haller, a Blumenbach, a Wrisberg, have understood by the name of physiology, and what may be termed experimental biology; that is to say, appreciable phenomena of the human body in health, separately and generally considered. The impossible, that is to say, how these phenomena take place, is totally excluded from the circle of our necessary knowledge in physiology."*

This profession of physiological faith has no need of comment. It is seen that its author only admits, in the science of life, the pure and simple description of phenomena observed during the natural play of the organs, or those excited by experiments. This is still Empiricism, and the most austere Empiricism, I will even say the narrowest. For the Empirical doctrine, well understood, in all the breadth of its principles, does not exclude from physiology *a priori* consideration, or hypotheses on the organic forces and the substratum of vitality, provided that these hypotheses be given as such, and not for realities; and especially, provided, that no one pretend to build on these abstract or imaginary entities systems of Medicine and therapeutical rules.

### PATHOLOGY.

In the same work, Hahnemann expresses himself in these words: "I pass to pathology, in which the same furor for systems which turns the brains of metaphysical physiologists, has given birth to so many hypotheses on the intimate essence of diseases, or why diseases are diseases; in one word, on what is called the proximate or interior cause. No mortal has a clear idea of what is sought here. * * * * Nevertheless, a crowd of sophists have affected the important airs of men who possess this knowledge.†"

This is what the author of Homeopathy wrote in 1808, before he had

* Valeur des Systemes en Medecine, French translation of Jourdan, p. 462.

† Ibid. p. 463.

promulgated his own system. The following was published in his Organon, in 1819: "We can easily conceive that each disease supposes a change in the interior of the human organism. Nevertheless, this change can be suspected only in an obscure and dubious manner, by the symptoms of the disease; but it will never be recognised to its full extent, in an infallible manner."*

These passages and a great number of others in which the same views are held, prove that Hahnemann professed in pathology as in physiology and philosophy the most absolute Empiricism or Sensitism; indeed, I have said the narrowest and most exaggerated. In fact, he goes so far as to be willing to expunge from medical language those collective expressions which designate a concourse of symptoms or morbid phenomena, such as pleurisy, pneumonia, tetanus, diabetes, hydropsy, mania, angina, phlogosis, etc., under the pretext that these words are not applicable to any real entity, to any distinct and always identical individuality.†

But can any one mistake to such a point the most elementary principles of general grammar as to be willing to banish from scientific language abstract terms, because these terms give rise often to very different ideas with those who use and understand them? Thus the words pleurisy, tetanus, diabetes, inflammation, etc., have extremely varied significations, not only in pathological treatises belonging to different epochs, but even in those of the same epoch. This is doubtless a fault, an imperfection; but this fault and imperfection are common to all the sciences and all languages; they are inevitable.

Do the names of the classes, orders and families in natural history represent real objects? Is there any *individual* in the vegetable kingdom which is termed acotyledon, or leguminous, or labiated? Do not these several words express an abstract collection of ideas or of properties common to a multitude of different vegetables? Would you exclude from philosophic language the words substance, body, spirit, virtue, courage, chastity, vice, etc., because these denominations have an application to nothing material, nothing which may be perceptible to the senses; because they awaken sometimes in those who understand them very varied ideas; because, in fine, there are ignorant persons who attribute to these abstract expressions an objective reality?

What will you put in place of the words gastritis, variola, pneumonia, etc., which you would exclude from pathological language? The

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* Organon. The Art of Curing, sec. 5.

† Ibid. Section 83, and explanatory note.

enumeration of all the symptoms or accidents realized by each patient, responds Hahnemann. Thus a pure homeopath must not say, for example, I treat a man attacked with *an acute articular rheumatism.* He would come greatly short of Hahnemannic orthodoxy; but he must say, I treat a man who, in consequence of taking cold has been attacked with acute pain in this or that articulation; the pain is exasperated at certain hours in the morning or evening. There is a certain degree of swelling, coloration, etc.; a difficulty or complete impossibility of motion; so many strong, slight or medium pulsations in the morning, at noon or at night, before or after meals, etc. The patient realizes a vertigo when he closes his eyes at five o'clock in the morning; his head swims when he looks upward after drinking; there are sour belchings after eating sour-crout, etc. etc. The stools are sometimes green, sometimes gray, sometimes of a sour or putrid odor, etc. etc. He has itching of the nose the day after taking a cup of tea, and a violent itching at the anus on awaking on the morning of the fifth day, etc. He is inclined to anger; sometimes he is frightened and troubled without cause, and a thousand similar futilities.

By these absurdities Hahnemann proposes to replace the usual denominations of diseases and the nosological descriptions of authors. I am ashamed for the enlightened followers of Homeopathy to insist on the refutation of so gross a philosophic heresy, which several of them have disavowed; but I am forced to do so, because it constitutes one of the foundations of the mother doctrine.

It may possibly be objected, that Hahnemann does not proscribe the names of diseases in an absolute manner; that he even tolerates them in common language in the presence of the unprofessional; that he has even employed them sometimes in his writings. Certainly I lose nothing by making this concession. But what does this prove? Nothing else but that this author has not been able to change the essence of human language; that he has been constrained, notwithstanding his obstinacy, to express himself like every one else. It is a law which no man, no Hahnemannic Society whatever, can ever change nor disturb. It is a specimen of folly, or alienation, or obstinate ignorance to have attempted not to conform to it, and so directed his disciples.

Nevertheless, pathology not being cultivated with any particular care by the founder of Homeopathy, I leave this branch of medical knowledge, to pass to therapeutics—the true battle field of Hahnemann, the special object of his meditations and researches.

THERAPEUTICS OF HAHNEMANN.

The grand axiom of Homeopathy, the one from which the doctrine takes its name, is this: *Cure diseases by remedies which produce symptoms similar to those of the disease.**

The first question to be asked after reading this axiom, so contrary to the received ideas of every one, the learned as well as the ignorant, is this: Where has the author obtained his therapeutic rule? On what observations and experiments does he found so paradoxical a proposition? I have sought throughout the works of Hahnemann for a clinical observation which would justify his famous axiom, and I avow that I have not been able to find a single one.

Can any one cite as medical observations worthy of any confidence, such remarks as the following: "A diarrhea which had existed for several years, and which threatened an inevitable death, against which all remedies had been employed in vain, was cured by an unprofessional practitioner in a rapid and durable manner by means of a purgative, as Fischer observes, to his great astonishment, but not to mine. * * * Boerhaave, Sydenham and Radcliff were able to cure a species of dropsy with alder blossoms, simply because the alder, as Haller tells us, produces tumors (œdema) by its external application."

"How many times does not the small-pox produce deafness and dyspnœa? These two chronic evils were therefore extinguished by it, when it had attained their highest development, as I. Fr. Closs has remarked. * * * Vaccination, which causes as its proper sign a tumor on the arm, has also cured after its eruption a swelled and nearly paralyzed arm."†

If it is by observations of this kind that Hahnemann pretends to prove the law of similars, it must be admitted that the partisans of Homeopathy are not hard to please in regard to proofs. I can furnish them with another, which doubtless escaped the erudition of their patriarch: The son of Henry I., King of England, having been attacked with small-pox, his physician, a skillful man if there ever was one, ordered with all convenient ceremony that the young prince be enveloped in scarlet; that everything about him be red—the hangings of his chamber and the clothes of his servants. "This arrangement cured him so well," he says, "that not a single trace of the disease was left upon his face."‡ We see that John of Gaddesden,—this is the name of the celebrated therapeutist—had a presentiment of Homeopathy!

Since Hahnemann is contented with as gross analogies as those above

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* Organon, sec. 15. † Organon, § 41.

‡ Freind, History of John de Gaddesden.

given, it was not difficult for him to demonstrate, that the cures of all the authors that history has transmitted to us were affected in the homeopathic way. Indeed, where is the remedy, the administration of which may not be followed by one or two symptoms having an analogy more or less remote with certain morbid symptoms, especially if we relate, like Hahnemann, to the action of the remedy all the grave or slight phenomena which manifest themselves for ten, twenty or forty days after its administration?

This author affirms that there are but three ways of employing remedies specifically, namely: 1, The Allopathic method, which uses remedies whose effects are different from the symptoms of the disease. 2, The Homeopathic, which employs remedies whose effects have the closest possible resemblance with the symptoms of the disease. 3, The Antipathic method, which employs remedies contrary to the disease.

This enumeration is not complete, and there should have been added to it, for greater exactness, the *Isopathic*, which consists in making use of means identical or of the same essence as the disease, such as innoculation, etc. But let us pass over this omission, to which I do not attach much importance. There is another much more capital reproach, which I make to the manner in which the action of curative agents is regarded in the above. I say that this manner of considering therapeutic effects is radically defective, because it turns the human mind from the true object of the Art, to enter upon researches as fruitless as insoluble.

What is in fact the true aim of therapeutics? Is it not to cure? What then is essentially important to know in regard to any remedy or treatment? Is it not first, if it cures; then if it cures promptly and surely. Finally, in what doses and in what morbid circumstances it shows itself most efficacious. Well then, in what way can one be assured incontestibly of all these things? Is it not by means of therapeutic proof? Is there any testimony that can dispense with this? The homeopaths, the allopaths, the antipaths and the isopaths, are they not all obliged to appeal to this criterion and submit themselves irrevocably to its sovereign decision.

When therapeutic proof has spoken, what is the use of enquiring if the remedy has acted by homogeneousness or by antagonism, by similitude or difference? Is not this a vain research, since it can neither replace nor impair the testimony of the supreme criterion? Do we not arbitrarily restrict the field of experimental therapeutics when we include it, *a priori*, within this or that category of medicaments, either heterogeneous or homogeneous, homeopathic or allopathic; or when we circumscribe it within excessively minute, or very large, or medium doses?

Most writers in Medicine resemble the attorneys in the comedy of the *Plaideurs*, who speak interminably on matters foreign to the case, and say nothing, or next to nothing, on what concerns the litigation. When any one has made experiments with a remedy or a treatment in a certain class of diseases, he describes, as briefly as possible, the characteristic symptoms of the state of the patient, and the manifest results of his experimentation, but dwells at great length on the *presumed* or *pathogenic* or *essential cause* of the morbid phenomena, and on the *intimate* modification which the treatment is supposed to impress on the organism; things entirely imperceptible to the senses, and on which our minds can form only ephemeral conjectures. We know, for example, that opium generally causes sleep, but that frequently, also, it produces agitation. This double effect of the same substance has put to torture the minds of the theorists of our age. They have written a thousand dissertations, and imagined numerous theories to explain this apparent anomaly, without advancing the question one iota. Does opium possess sedative or exciting properties? Notwithstanding our progress, and our pretentious physiology, we know no more on this matter than did Galen, Avicenna, the Arabists, and the scholastics of the middle ages. If any one now asks why opium produces sleep, we shall not be able to give a better reason than that in Moliere: "*Opium facit dormire, quia in eo est virtus dormitiva.*" Behold! where all our curious researches on objects inaccessible to our observation lead us, and cause us to neglect the essential and indispensable? Instead of expatiating learnedly on the excitant or sedative property of opium, it would be better—it would be infinitely more useful—to seek out, by direct and continued experiments, what are the conditions of health and disease in which this substance produces a sedative effect, and what are the conditions in which it produces an opposite one; what are the doses and the preparations most proper to bring about either result.

But this way is too simple and too long, and does not give a free rein to the imagination. Hahnemann preferred to follow the beaten path, by substituting in all his writings, transcendental explanations for clear and established experience. In justification, for example, of infinitesimal doses,instead of bringing detailed and authentic facts of curing to the support of his method, he endeavors to persuade you by an inextricable tissue of subtile devices, that diseases being only immaterial alterations of an immaterial vital principle, must be combatted by forces of the same nature—that is to say, by the spiritual virtue of medicaments, developed by means of homeopathic attenuation.*

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* Organ. sections 53, 66.

Another time he will tell you that the general forces of nature, such as attraction, electricity and caloric, whose powers are manifest to every one, are neither ponderable nor coercible; whence he infers that we are wrong in doubting the efficacy of any infinitesimal doses whatever.*

This proves that he has not, then, observed that if the forces of which we have just spoken are imponderable and inaccessible to our senses, their substrata are not at all so. Thus, the force of attraction is in proportion to masses; electricity is developed in proportion to the friction of surfaces; caloric to the quantity of combustibles—all of which are material, and appreciable by the senses.

It is known that Hahnemann has composed a treatise on Materia Medica and Chronic Diseases, in which he attributes a multitude of new and unheard-of properties to several substances supposed hitherto to be perfectly inert. He assures us, for example, that the carbonate of lime, administered in doses of the *sixtillionth part of a grain*, produces no less than one thousand and ninety symptoms, from among which I select the following: †

1. In the evening (thirteen days after taking it), on going out, unsteady gait.

2. Dizziness on walking out (at the end of twenty-six days).

145. Sudden deafness, immediately after dinner.

147. Itching on the border of the eyelids (after five days).

572. Itching at the anterior part of the glans penis, after urination (after twenty-eight days).

583. Ardent venereal desires, especially during a walk before dinner (after seventeen days).

865. Great heat at the extremity of the big toe (after twenty-one days). ‡

Pray tell us how any one can assure himself that an imperceptible atom of the carbonate of lime is, unquestionably, the determining cause of these thousand and ninety symptoms, a great number of which are manifested only at the end of ten, twenty and thirty days after the ingestion of the medicamental atom? Who can assure us that the most of these strange phenomena that are attributed to the influence of the infinitessimal atom, are not, rather, the effect of a multitude of other forces, quite energetic, on the contrary, which act unceasingly on the economy—some permanently, others accidentally? Is it not absurd, as Hahnemann himself says, elsewhere, to attribute an effect to one force,

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* Organon, sect. 305, and note.

† The figures denote the order in which the symptoms stand.

‡ Treatise on Chronic Diseases.

while there are in play, at the same time, other forces which often contribute more than it to its production.*

To these questions, so legitimate and so pressing, the author of Homeopathy makes no response. He only opposes affirmations destitute of every species of proof, and his credulous adepts are contented. They accept his strangest assertions as articles of faith. Some, however, have separated themselves from the faithful flock, and attempted to revise the symptomatic categories of Hahnemann. They have submitted each of his propositions to scrupulous examination, and exact experiments; and what have they found at the foundation of this burlesque frame, pompously announced as a divine revelation? I will let one of the admirers of Hahnemann make the reply.

M. Rapou, historian of the Homeopathic doctrine, in summing up, under the title of the "Specific School," the sum of the differences which are exhibited among the partisans of the new method, expresses himself as follows: "The law of similars is positive, but it does not constitute the general law of therapeutics. Medicamental substances may operate by the law of contraries; enantiopathy is as often in play as homeopathy—both are secondary and accessory modes. The great principle is the *specificity*, and the most important problem is not to seek the similarity between the remedy and the disease, but to find, directly, the specific appropriate to each morbid state. Dynamization does not exist even where by many its importance has been greatly exaggerated. Dilution is incapable of developing a medicamental efficaciousness in most substances which are inert in their natural state, and which Hahnemann has put among the number of active remedies. Infinitesimal doses have no marked action; it is necessary, ordinarily, to employ tinctures and powders, and never to extend them beyond the third or fourth divisions. Our medicines may be administered without inconvenience in the ordinary pharmaceutical preparations, and the various allopathic remedies may be employed conveniently with them. Clinics must become the principal source of indications, and concur, in the largest degree, to the formation of our *pure materia medica*. This last part of science is to be reconstructed; an anatomical and physiological classification of symptoms must be introduced into it. The theory of *psora*, and its pretended consequences, are false in all respects. We can and we must seek to combine the specific proceedure with the usual indications. It is proper to fall back to the use of pharmaceutical mixtures." †

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* Treatise on Materia Medica.

† Histoire de la Doctrine Homœopathic, 1847—vol. II, chap. XIV.

These, then, are the results to which Hahnemann's own disciples have arrived when they endeavored to verify by facts, the astonishing assertions of their master. Each one of the fundamental propositions of the new doctrine, receives thereby the most formal denial. What remains of this doctrine after so complete and detailed a refutation? Nothing, absolutely nothing which is worthy of the attention of a man of sense.

As to the *exposé* of principles which we have just read, and which forms the programme of emancipated Homeopathists, under the name of the Specific School *(Ecole Specificienne)*, I do not see what the most severe critic can find to condemn, unless it be the words *specificity, specifics*, which might be advantageously replaced by the more exact expressions *synthesis* and *synthetical*. Apart from this slight modification, the programme of the Specific School agrees entirely with the principles which we have, ourselves, proclaimed under the head of *Empiri-Methodic system.*

CONCLUSION.

The Hahnemannic doctrine, whose defects we have only feebly set forth, offers to us the strange assemblage of assertions devoid of proof, audacious paradoxes and manifest contradictions. Its author, after having declared solemnly in numerous passages that "the human mind cannot form of itself a notion of the essence of things, of their cause and their effects; that every proposition must be founded on sensible observation, on facts and experiments," forgets the maxims of his wise philosophy, when he is laying the foundation of his medical system and laboring for its development.

From that time he did not hesitate to affirm that all the chronic diseases that are observed in Europe, (except syphilis,) are the result of a protean impalpable miasm which he calls the *psoric* or *scabby*. If a child passes worms in his alvine dejections or by vomiting, if he is subject to opthalmia, catarrh, convulsions, sore throat; to furuncular tumors, scrofulous engorgement, etc; it is, according to Hahnemann a latent psoric miasm which is at work. If a young girl is affected with chlorosis, or hysteria or chorea; if she is subject to spitting of blood or threatened with pulmonary tubercles or aneurism of the heart, etc., etc., psora is committing in her these ravages. If an old man has hemorrhoids or tetters, if he is affected with a catarrh, or an asthma, or dropsy, or gout, or rheumatism or paralysis, etc., the psoric virus manifests in him its presence.

By what series of transcendental observations, of delicate experiment, has Hahnemann been able to grasp and unite so many and so various phenomena with the incoercible and immaterial miasm which he names *psoric virus*. He is silent upon this subject, which is incomprehensible

and incredible to whoever does not possess homeopathic faith; but becomes lucid and indubitable to those who possess this new, pretended divine revelation.

An orthodox Homeopathist is very careful not to suspect the most unimaginable assertion of his prophet. No one among them, for example, has ever attempted to call in question the following anecdote by which Hahnemann pretends to prove the efficaciousness of his infinitesimal doses: "Let a melancholic patient, disgusted with life, and feeling pressed by an insupportable anguish to commit suicide, smell for several minutes only, a flask containing a quadrillionth of a grain of homeopathic powdered gold, and at the end of half an hour he will be delivered from the demon which seemed to possess him, and his flow of spirits will become again like that of a man of sound mind."*

No founder of a medical philosophic sect, since Pythagoras, has pushed as far as the chief of the Homeopathists, the despotism of the word of the master. No one has imposed on his disciples more submissive and blind credulity. In order to demonstrate the reality of homeopathic cures he does not report any well established facts or observations, he contents himself with affirming that the medicamental atoms given to his patient proceed to the imperceptible point of the economy which is the seat of the primary lesion, and by acting upon it cause the disease to cease, naturally, by replacing it with a stronger artificial affection, which is subsequently extinguished by the vital force; and not one of his disciples ask him how he has been able to perceive all these phenomena, inaccessible to the human eye—how he has been able to follow the track of the infinitessimal atom, the course of which he recounts with so much assurance! Oh, Messieurs Homeopathists, you merit well the epithet of *Hahnemanni servum pecus!*

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* Treatise on the efficaciousness of minute homeopathic doses.

# SEVENTH LETTER.

## THERAPEUTICAL METHODS.

### I. Present State of this Branch of Science.

This branch of the science is, without contradiction, one of the least advanced; only a few feeble gleams of light pierce the thick darkness that envelopes it. The classification of the therapeutical methods, by Barthez, which I have previously cited, is yet the best and most rational that we possess.* However, it can only be considered a rough draft, because it partakes, with all the other modern therapeutical classifications, of the capital fault of incoherence and inconsistency. Thus the classification of Barthez admits a natural method, having for its object to favor, accelerate, or regulate the progress of diseases which tend to a favorable termination. An analytical method, in which each disease is decomposed into a certain number of elementary affections, which are to be treated separately by appropriate means; an empirical method, by which certain maladies whose nature is unknown are combatted with remedies whose immediate or primitive action is not understood; finally, a perturbative method, which Messrs. Trousseau and Pidoux replace by the substitative method. Let us consider the incoherency of this classification. The first method is called *natural;* the second ought to be called, by way of opposition, *unnatural.* There is a method which is designated by the term analytic; there should be one called the synthetic. The fundamental rule in every classification or division of any subject whatever is, that the parts of which it is composed should reciprocally exclude each other, but this rule has been comparatively forgotten, as may be perceived in the classification of Barthez; each of the methods which have been admitted is founded on considerations of an order foreign to the preceding, instead of flowing from the same principle, as the branches of a tree proceed from the same trunk. What would be said of a naturalist, should he divide bodies into artificial and organic, or of a pathologist who should divide diseases into epidemic, endemic, and contagious? It would be alleged that they mix

* See our Third Letter.

and confound all their ideas. Does not a therapeutical classification based upon different principles merit the same reproach? The inconsistency of the classification of Barthez is not less palpable than its incoherence. In fact, we find a method distinguished from the others by the title Empiric, which signifies, in the ordinary language of authors, unreasonable and unphysiological. But this method being the one which, by the consent of everybody, produces the most brilliant cures, it follows according to its peculiar denomination, that physicians never produce better cures than when they treat diseases without being guided by, or even contrary to their theories. What beautiful logic! And yet I venture to say, French Medicine has not produced a greater genius than Barthez. But what can you expect; the most adroit musician can not produce harmonious sounds from a poor instrument. As long as theorists shall obstinately designate certain curative methods by titles which are appropriate, or ought to be appropriate, to all of them in general; as long as they will continue obstinately to call the one rational, the other natural, a third exact, a fourth physiological, another experimental or empirical, etc., never, no, never, will therapeutics escape from the chaos into which it has been plunged; never shall we succeed in forming a truly rational classification of the different modes of treatment.

In order to accomplish an object so desirable, it is necessary at first to establish a universal principle of therapeutics, embracing all the operations of internal and external Medicine; afterward, to deduce from this principle the different curative methods proposed; finally, to designate each of these methods by a term which is applicable to it alone.

We have already fulfilled the first of these conditions, in forming the following precept, whose evidence and generality no one will contest; *treat each malady by those means whose efficacy in similar or homologous cases has been demonstrated by experience.** We shall now attempt to fullfil the other two in the classification which follows.

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## §II. Classification of the Therapeutical Methods.

### The synthetical method.

The most ancient, the most natural, and the most simple mode of cure consists in opposing to each disease which presents itself, one remedy or one combination of curative means, which removes the disease at once. In this mode of treatment our mind considers all the symptoms as forming

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* See our Second Letter, § 4 and 5.

an indivisible concourse, as the manifestation of one simple morbid entity, against which he directs a plan of medication which seems to attack the disease in its essence, and to put an end to all the accidents by a virtue which is special and peculiar to it, and is in some sort incomprehensible. I shall give to this method the epithet synthetic; that is to say, simultaneous, a word which represents very exactly the manner in which our minds consider both the morbid symptoms and the effects of the treatment.

The ancients, who saw in all cures nothing but the result of antagonistic forces, designated these kinds of medication by the name of *antidotes*, the moderns called them *specifics*. By a sort of precipitation very common to the human mind, the first therapeutists were very quick to arrange among the antidotes a larger number of substances whose virtues were by no means assured. Thus they designated a large number of plants by the title of *vulnerary*, because they supposed them to possess especial virtue in the cure of wounds. They called *theriacs* several very complicated pharmaceutical preparations which, in their imagination, had a marvelous efficacy against venom and all sorts of poisons.

It is the same with a multitude of pharmaceutical affections of antiquity. The moderns have not been less prolific in this respect, but have often been less sincere; and the pompous denominations by which they designate numerous medicaments are only enticing labels to attract customers. Among this number are to be classed the elixirs of longevity, of immortality, the anti-goutous and anti-mucous nervines, the sedative waters, etc. etc.

Galen, not knowing how to explain the therapeutical effects of antidotes, has said that these remedies *act by their whole substance*, and medical posterity has repeated this explanation, which was nothing more than a method of concealing its ignorance: in the same way natural philosophers concealed their ignorance of the cause of the ascension of water in the tube of a suction pump, by saying that the liquid rises in consequence of *nature's horror of a vacuum.* The moderns, not willing to be satisfied by senseless explications, have fallen into excesses not less ridiculous. Some have denied the existence of specifics; others, without contesting either their existence or admirable efficacy, have endeavored to proscribe them, or to restrict their application as much as possible. They have treated these remedies as irrational. They have banished them from their theories, in order to give them over to blind and ignorant practitioners. I have demonstrated the error of this peculiar prejudice, but it cannot be too much denounced for the interests of humanity and for the honor of the Medical Art.

Too fortunate indeed would be both patients and physicians, if the occasion more frequently presented itself in which we could employ those remedies, called specifics, or better, synthetics, which remove a disease in totality as if by a charm, however numerous its symptoms may be, and whatever mask it may wear! The day is not far distant when men will be astonished at the resistance of my cotemporaries against the restoration to the method which I call synthetic, the title of *rational*, which it should never have lost, and which it merits in the highest degree. We do not ask the natural philosopher or the chemist, why alkali combines with an acid; why the electric spark converts the mixture of hydrogen and oxygen gases into water. We do not ask the physiologist why the marsh mallow is insipid to the taste; why sugar is sweet, and succory bitter; why my hand is opened or shut by the act of my will? And yet you dare ask the therapeutist why quinia cures intermittent fever, mercury syphilis, digitalis idiopathic palpitations of the heart, etc. etc. Are these latter phenomena more easy to explain than the former? Is it not just the reverse? Is it not plain that our exactions in regard to the physician are unjust and unreasonable?

We distinguish two sorts of specifics: the one which acts especially upon certain physiological functions, as emetics, diuretics, emmenagogues, soporifics, purgatives, etc., were known to the ancients. The other, whose specificity is manifest only in certain morbid conditions, such as febrifuges, anti-syphilitic, anti-scrofulous remedies, etc., have been appreciated only by the moderns.

It is the greatest pride of modern medicine, and without contradiction its best title to the gratitude of mankind, that it has discovered genuine specifics for diseases; that is to say, remedies as sure and much less painful than the most vaunted surgical proceedings. A physician who vaccinates a child in order to protect it against the variolous infection, or who administers a salt of quinia to arrest the paroxysms of intermitting fever, is he not as certain to obtain a decided cure, as the surgeon who ties an artery affected with an aneurismal tumor, or who attempts to break up a vesicular calculus by the ingenious maneuver of lithotrity? Why then foolishly call the conduct of the first empirical—which in our language means blind—and that of the second rational? Is this not in consequence of a pure mental hallucination, as I have elsewhere peremptorily demonstrated?*

As to myself, firmly convinced that the synthetical method, which removes diseases almost instantaneously by special medications, is the

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* See Fourth Letter, § 3.

most rational as well as the most efficacious and sure, I assign to it the first rank among therapeutical methods. I do not hesitate to proclaim loudly, that it accomplishes better than any other, the object of our Art, and shows its power and utility more manifestly than any other, to the eyes of the world.

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### §II. Anylitical Method.

Unfortunately, it is not always possible to attack a malady, that is to say, a collection of symptoms, entirely *en masse*. The number of specific medicines is still extremely limited. In the most common cases, we are, therefore, obliged to resort to analysis, which consists in decomposing each pathological condition into a certain number of elements or more simple maladies, and then to direct against each one of these morbid elements an appropriate medication.

I suppose, for an example, that we have to treat a man of middle age and average strength, attacked with pneumonia. Since we possess no specific against this affection, the following is, in the present state of the science, the method generally pursued: During the first two or three days, the patient will be bled, in order to diminish the sanguineous congestion that occurs in the lung; and all nourishment is withheld for the same purpose. Tepid emolient drinks, which diminish the general tension, dispose to diaphoresis and moderate the internal heat, by which the patient is often incommoded, are given. Finally, certain slightly narcotic drinks are administered, in order to calm the nervous irritation, which the paroxysms of coughing and difficulty of respiration incessantly provoke. After continuing this treatment a few days, many practitioners give tartar emetic, either in large doses (from six to ten grains to five ounces of water), or smaller ones (one or two grains to the pint). Experience proves that the use of this medicine in either form, is followed sometimes by alvine dejections, sometimes by vomiting, again by sweats, or also by two or all three of these phenomena. But whatever may be its immediate effects, it favors, nearly always, the absorption of the white fluids with which the lung is engorged at this period of the disease, and it is in view of this secondary result that it is thus given. I designedly omit to mention a number of other means by which we propose to fulfill different indications. These details would be here of no utility whatever. What precedes suffices abundantly to explain the mechanism of the analytical method at the bed-side, and I must restrict myself to that.

COMPARISON OF THE TWO PRECEDING METHODS.

It is sufficient to glance at the description of each of these therapeutical methods in order to be convinced that the first is the most simple and the most natural, and that its application requires no effort of the mind; while the second, more complicated and more artificial, requires in its application more or less thought. This consists, as has already been said, in decomposing a pathological state into its several elementary lesions, or simple affections, and in arranging the treatment which shall respond as much as possible to each one of these morbid elements.

It is true that by this mental analysis of pathological states, our mind seems to penetrate farther into the intimate nature of the disease, just as, in the combination of a multiple treatment, it appears to enter more into the knowledge of the physiological action of each modifier. In a word, it is evident that the analytic method requires a series of intellectual operations and reasonings, more or less abstract, which the synthetical method spares us. For example, far less labor of the intellect is necessary in order to prescribe a suitable dose of quinia for an individual attack with intermittent fever, than to decompose pneumonia, typhoid fever, or Asiatic cholera into a certain number of elements, and subsequently to direct against each one of these an appropriate medication. It is therefore not astonishing that the mind, which often judges of the value of things only by the trouble which they have cost it, in comparing the extreme simplicity of the therapeutical synthesis with the complications of analysis, should have been induced to consider the first process much less wise and rational than the second. *

But if, laying aside this gothic prejudice, we estimate things as we ought to do, by their real intrinsic value—if we judge the therapeutical methods by their degree of certainty and efficacy, then, without doubt, we shall give the preference to the synthetical method; and we shall be much astonished if the title of rational should be denied to this, in order to accord it exclusively to its younger sister, to whom the epithet of *arguer*, or *wrangler*, is much more appropriate.

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* There was also a time when the merit of the difficulties overcome was held in high estimation in appreciation of literary works. At that epoch flourished the enigmas, words for rhyming, roundelays, and other compositions, *ejusdem farinæ*. The law giver himself of the French Parnassus, made sacrifice to this bad taste when he said:

"A faultless sonnet is better than a long poem."

That which contributes still to perpetuate the common illusion in favor of the Analytical method is the immense service which it has rendered and still continues to render to chemistry; for at all times this latter science has had the privilege of exercising a considerable influence upon medical theories. But it is not considered that chemical differs essentially from therapeutical analysis; the first operates upon palpable objects, and obtains, by decomposing them, fixed and determined elements. The second only acts upon objects purely intellectual; it decomposes, not diseases themselves, but the ideas which we form of those diseases; it does and can only obtain variable, uncertain, and imaginary elements. Consider well this capital difference, dear reader, and you will comprehend why the Analytical method, which leads to admirable discoveries in chemistry, is in therapeutics an inexhaustible source of errors. You will understand why the clinical analysis of Barthez differs so widely from that of Boerhaave, and why that of Broussais does not resemble either of the other two. You will comprehend why it may happen that of two, three, or ten physicians called in consultation each one may have a particular notion of a pathological state, which must be decomposed mentally; while, if they have in hand a disease for which the Science possesses an established specific, they will be nearly unanimous.

From which I conclude that in therapeutics, synthesis is incomparably more simple, more sure, more efficacious, and more rational than analysis; that the highest aim of this branch of Medicine consists in restoring, as far as possible, the treatment of each morbid state to the synthetical process; an object that the German specific sect has perfectly understood, in proposing as an object of research, specific remedies, without troubling themselves whether they act by antipathy, homeopathy, isopathy, or allopathy.

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### III. Expectant Method.

Synthesis and analysis are methods common to all the sciences, but therapeutics embraces others which are peculiar to it; thus, when a disease has a determined and rapid course, as an ephemeral fever, simple measles, varioloid, a simple wound that involves no important part, etc.; when a disease, although more grave, offers no alarming symptoms, and seems to tend to a favorable termination by the simple forces of nature, as an inflammatory fever, without any manifest inflammation of an important organ; when a disease announces itself in an obscure manner, and there is nothing urgent in the case; finally, in a multitude of

other cases which it would be too tedious to specify, it suffices to place the patient in good hygienic conditions, and to prevent his committing any imprudence, in order to obtain a cure.

In such cases, nature appears to supply all the means for the cure; the physician has only to look on and hold himself in readiness, in order to correct, when necessary, the digressions of nature, to excite or moderate her, to sustain her forces, to aid her, in a word, according to the indications which she herself furnishes. The part of the medical man in these cases has been compared to that of a servant or agent who only waits, before he acts, for the signal of the master. *Medicus minister naturæ*, is an axiom that has become celebrated in many schools of Medicine, but which is absurd when it is made applicable to the entire system of therapeutics.*

Some authors, considering the office of the physician in these circumstances as nearly a nullity, have given to the Expectant method the name of *inactive Medicine*, but this qualification is evidently inexact, for the inaction of the physician is only apparent. Although he may prescribe nothing energetic, his mind does not cease to be attentive and occupied; he watches over the progress of the symptoms, prevents imprudences, regulates the regimen, etc.; none but ignorant persons can regard as *null* this function of the man of science. Those, on the contrary, who have been desirous to generalize the Expectant method, under the title of *Natural* or *Hippocratic*, consider each malady, or each concourse of particular symptoms as a regular concatenation of phenomena, which nature, the soul, or the vital principle developes with the determined aim of curing. *Natura Morborum Medicatrix.* Nature is the sovereign curative agent of all our diseases—this is their universal axiom in therapeutics. But if it is true that nature alone cures certain affections, it is not less demonstrated by daily observations that she is often impotent, or even injurious, without the intervention of Art. I have already cited very striking examples of this, which saves here the trouble of insisting further upon this point.*

### SECONDARY METHODS.

The three methods which I have just described embrace all therapeutical acts, whether internal or external. There is not a single medical prescription, nor a single surgical operation which can not be referred to one of the three categories of medication above described. However,

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* If on many occasions a physician is the *minister naturæ*, in how many others is he also *magister naturæ*.

* See Second Letter, § 4.

many authors have given the name of *therapeutical methods* to modes of treatment of a very much less general application. Thus they have admitted methods called *anti-phlogistic*, *derivative*, or *perturbative*, *substitutive*, etc., but it is easy to see that each one of those enter into one or the other of the three preceding, and should not consequently be arranged on the same line, in a good classification.

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### § III. Application of our Theory of Curative Methods.

Let us suppose that it is desirable to appreciate and classify the treatments so numerous and so variously advised in modern times, in order to combat the cholera, a question replete with present importance, a truly inextricable chaos, according to the poor doctrines of our classics. God forbid that we should wish to pass in review all the means that have been proposed or tried, in order to conjure this terrible plague! It will be sufficient to direct our attention to a few of them, to show how we may seize the prevailing idea, and assign to each one of them the rank which it should occupy in a therapeutical classification, in order that every attentive reader may be able afterward to accomplish the same work in regard to any treatment, and in any disease whatever.

#### First Category — Synthetical Method.

There are physicians who, considering all the cholera phenomena as the manifestations of an indivisible morbid entity, have endeavored to arrest its development by the aid of one uniform medication, the specific efficacy of which has appeared to them sufficiently justified by certain observations, or certain analogies more or less well founded. Such are those who have had recourse to the saline medication in the use of chloride of sodium, or to a mercurial treatment, or to the nitrate of silver; those still, who have proposed cinchona and the salts of quinia, under the title of prophylactics, etc.

#### Second Category — Analytical Method.

Other practitioners, regarding the cholera as a multiple affection, or at least polymorphous, have decomposed it by mental analysis into several elements, or simple affections, and have first directed their therapeutical resources against the one of these elements which seem to them to govern and give impulse to the rest.

We arrange in this category the treatment by diluent drinks, of which the obvient object is to dissolve and evacuate the acrid matters which are supposed to engender the disease; that by evacuants, emetics, and purgatives, employed in the intention to expel from the economy the

deleterious principle which, corrupting the secreted products, provokes all the morbid accidents; third, the treatment by anæsthetics and anti-spasmodics, such as opium, ether, chloroform, etc., which affect particularly the nervous element; fourth, the anti-phlogistic treatment, the aim of which is to combat the phlogosis of the alimentary canal, which is considered as the prime motor, the determining cause of all the other phenomena; fifth, the use of stimulants, such as aromatic waters more or less alcoholic, tinctures, ammonia, galvanism, etc., the ordinary effect of which is to arouse the oppressed vital forces, to arrest the alarming progress of prostration, etc., etc.

THIRD CATEGORY—EXPECTANT METHOD.

None of our practitioners have dared essay the expectant practice in this terrible disease; for the office of the temporizer which has immortalized the name of Fabius Cunctator, is more difficult to sustain in the midst of the general alarm and trouble menacing all the functions of the organism, than to head an army impatient to measure its strength with the enemy. The value of this method cannot therefore be judged, in epidemic cholera. Nevertheless there are patients who, not being able to obtain the counsels of a medical man, or being unwilling to follow them, like the lunatics in Salpétriere, have been guided by instinct only. May it not be said that in this class of sufferers, in which there were several recoveries, the expectant method was illustrated?

Does the reader see with what facility the classification of such numerous and divergent medications announced above, is effected? Now let him attempt to perform the same thing by means of therapeutical classifications in common use; he cannot accomplish it in a satisfactory manner. He could never decide which of the methods of treatment above enumerated merits, to the exclusion of the others, the title of rational, or physiological, or natural, or empirical, or substitutive, etc., for these epithets are nearly equally applicable to all; whence it follows that they characterize none in a special manner.

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## IV. Classification and Denomination of Medicaments.

This section of therapeutics has been the object of bitter and multiplied recriminations. There is not a single treatise on Materia Medica published since a half century, in which the instability, confusion and insufficiency of the classifications and pharmaceutical nomenclature are not deplored. Bichat has pointed out to us the principal sources of these defects: "There have been in Materia Medica no general systems,

but this science has been influenced by turns, by those who have reigned in Medicine; each of whose opinions, if I may so say, has been reflected back upon it; hence the vagueness and the uncertainty that it now presents." *

Must we, to avoid these causes of error, adopt the classifications of the naturalists, as a recent author in Materia Medica and therapeutics has done? † I think not, for this reason: all methodical distributions of the materials of a science must be based on the properties which this science entertains. Now, what properties in medicamental agents are considered in therapeutics? Those which modify the animal economy. It is necessary, then, to name and class these pharmaceutical materials according to the modes of action which they manifest in the living organism. To seek another base, less variable, as M. Dieu has done, is to change the difficulty, and not resolve it.

Unhappily the action of the same substance on the animal economy may vary according to numerous circumstances, which it is often difficult to appreciate with certainty. For example, tartar emetic, administered to a series of patients, in different forms and doses, can produce a sweat in one, an increase of bronchial secretions in another, alvine evacuations in a third, and vomiting in a fourth. In others it can arrest vomiting, stools, etc. Applied to the skin, this substance provokes an eruption of pustules, followed by ulcers, the healing of which is tedious. Under what head shall we rank this medicament? Which of its effects can be regarded as the more characteristic and essential? Answer: the one which is the most sensible and the most constant.

But if it happens that a remedy produces several effects nearly equally remarkable, to which shall we give preference? It is not important which is placed in the first rank, provided the others are carefully stated. Thus, I would not hesitate to class tartar emetic among the emetics; but I should not complain if it is placed among the irritants, provided care be taken to note its property as a vomit. I would class opium, in like manner, among the anodynes or the narcotics, being careful at the same time to notice that, instead of calming certain pains, cephalalgia for example, it exasperates them; that instead of producing sleep, it sometimes produces agitation. I should be particularly careful to indicate the circumstances that influence these various results.

Finally, it may happen that a medicament changes its position in the pharmaceutical scale, as the result of some newly discovered property.

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* Anatomie Generale. Considerations Generales, § II.

† M. Dieu, Pharmaceutist-Major and Professor in the Military Hospital of Metz, has followed fully the divisions of the old naturalists, who separated, as is shown, all substances into the three kingdoms.

Thus ether and chloroform, which two or three years ago were classed exclusively among diffusible stimulants, may now very properly be ranked among the anæsthetics.

To seek in any order of knowledge more stability and more perfection than comports, even, with the nature of this knowledge, is to lose time in the pursuit of a chimera. Now the Materia Medica, like Chemistry, is a science essentially changeable. The merit of a therapeutic treatise does not consist so much in the nomenclature and classification of curative agents, as in a scrupulous care to specify well the circumstances which cause a variation in the effects of these agents; not in attributing to them any imaginary virtue in connection with this or that medical doctrine, but in keeping strictly to the results of pure observation.

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### § V. Conclusion.

Up to this time no one has embraced in the same plan and united under one principle, internal and external Medicine. The most famous systematists of modern times have always been careful to exclude from their therapeutical theories surgical operations; that is to say, the medication whose effects are most evident, because these effects do not aid them in their theoretic explanations. Let a surgeon, for example, extirpate a tumor; no one could say that he had acted by the principle of contraries or similars, because in this case there is no relation of antagonism or similitude between his operation and the nature of the disease which he treats. But it can be well said that he attacks, synthetically, the product of the morbid affection.

This necessity in systems, other than Empiri-methodism, to exclude from the therapeutic scale external medication, is alone sufficient to prove the imperfection, insufficiency and falseness of these systems, if already I had not demonstrated this falseness in various ways besides.

It is true that Empiri-methodism does not pretend, like most other systems, to explain the *intimate connection which exists between the nature of diseases and the mode of action of remedies.* We willingly confess our ignorance on these subjects, which are impenetrable to the senses as well as the mind. We avoid carefully hazarding any conjecture in this respect, not being willing to offer to our readers arbitrary interpretations for truth, and ideal fictions for material realities.

# EIGHTH LETTER.

REPLY TO SOME OBJECTIONS CONCERNING THE EMPIRI-METHODIC DOCTRINE.

## § I. A Retrospective View.

The chief aim of this publication being, as I have announced from the commencement, to establish the practice of Medicine on an immovable base, to protect it from the incessant variations of physio-pathological theories, and to constitute, in a scientific manner, the Healing Art, whose processes, often disjointed or contradictory, seem to have among themselves no logical union, this has, it appears to me, been sufficiently attained in the preceding letters.

Indeed, after having established the necessity of a universal axiom in therapeutics, of a certain and incontestable evidence, embracing every possible mode of curing, whether internal or external, we have proved that this axiom cannot be other than the following: *that medication which has cured a disease, must cure equally all diseases analogous to it.* Whence is deduced at once this precept, which allows of no exception: *treat each case by means whose efficacy has been demonstrated by experience in homogeneous cases.**

Afterward we have shown, that the rational application of the precept can be very well effected by means of three general methods of treatment, which comprise all the operations of Medicine proper, and of Surgery, without any alliance with physio-pathological theories.†

Thus is established a foundation of a therapeutical system which is both rational and progressive: thus is realized the agreement, heretofore declared impossible, of science with art, of theory with practice, of reason with experience: thus is constituted what may be called the great medical strategy, *si parva magnis componere licet.* You know that the part of a physician combatting a disease has often been compared to that of a general in presence of an enemy. Well, if I may be allowed to continue the similitude, I would observe that sometimes the man of war attacks his foe in front, and attempts to overwhelm and destroy him at a blow; then he employs the *synthetic* method. At another time, on

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* See Second Letter. † See Second Letter

the contrary, he seeks to disunite the battalions of the enemy, in order to conquer them separately; in this case his method of attack is the *analytical.* Finally, it happens sometimes that a skillful general avoids committing himself, awaiting a favorable occasion, or hoping that his adversary will become exhausted by want of provisions or amunition. Has not this tactic much resemblance to our *expectant method?*

Thus you see, that according to the system of rational Empiricism, or Empiri-methodism, as I have exhibited it in these letters and otherwise, the practice of Medicine is scientifically constituted, without any support from physio-pathological theories; the *Art* of curing no longer offers the strange anomaly of processes called *rational,* whose efficacy is more than doubtful, by the side of others called *non*-rational, whose efficacy is perfectly established; the practitioner is no longer reduced to the necessity of making the humiliating avowal, that he can never cure better than when he treats a patient without knowing why. I might therefore limit here my task, and leave to others the care of developing the principles which I have established; to follow their application through all the branches of medical science, and to show how these principles govern, in all their details. But there are still some clouds to be removed, some objections that must be resolved, concerning the ensemble of the empiri-methodic doctrine, and in answering these I shall terminate my remarks on this subject.

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### §II. First Objection.

We read in the Essay on Medical Philosophy, by M. Bouillaud: "We have demonstrated heretofore that diagnosis is the essential foundation of therapeutics, or rather, we have admitted, with all physicians, that this is an axiom that needs no demonstration. How, indeed, can we treat a disease which we do not know? Therapeutics is really only a *deduction* or *corollary* from ideas or doctrines which we form on the nature of diseases."*

In order to refute victoriously the doctrine emitted in this passage by the celebrated professor of La Charité, it would suffice, doubtless, to refer the reader to the philosophic axioms which I gave in my Fourth Letter, and to the corollary which accompanies them. But I will not content myself with an indirect refutation, especially because there is in the passage which I have just cited a captious sophism, whose artifice it is necessary to reveal. "How treat," he says, "a disease which we

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* Essai sur la Philosophie Medicale, part III, chap. VI, p. 302.

do not know?" The question is urgent, and I do not know that M. Louis or M. Chormel, to whom he seems to address himself personally, has ever made any response to it. I shall endeavor, therefore, to answer it in their place; but before doing so, I ask to be permitted to propose a question myself.

Is not a gardener obliged to know the plants he cultivates? Must he not be able to distinguish a cabbage from a turnip, a carot from a beet? Certainly no one will question but that this knowledge is necessary. Does it follow from this that he can deduce by reason the rule of culture, the character of soil, manure, exposure, etc., which is appropriate to each of these vegetables? Every sensible man will reply in the negative. Take any man you please, learned in botany or vegetable physiology, chemical analysis, or microscopy; suppose that he combines the knowledge of all the academies, on these various branches of science, yet I defy his capacity to deduce from them directly, the least horticultural rule, without some previous experience of his own or of others. Having laid down this proposition, I come to the objection of M. Bouillaud.

"How treat," you say, "a disease which we do not know?" Everybody will agree with you that the thing is impossible. Every one will consent, for example, that to treat well a variola, it is essential not to confound it with a syphilitic pustule, and that to treat properly an inguinal hernia, it must not be taken for a bubo. Thus far you are right, when you insist on the importance and the necessity of diagnosis; when you affirm that without an enlighted diagnosis there is no rational, effective medication.

But because therapeutics can not proceed safely, if it is not guided by the light of diagnosis, does it follow that it needs no other aid? Does it suffice to diagnosticate well a disease, in order to know how to cure it? In a word, is therapeutics, as you pretend, a deduction, a corollary from our ideas on the nature of disease? This is exaggeration and an error, scarcely conceivable on the part of a clinist so distinguished as the professor by whom it has been emitted; an error which the following examples will make perfectly plain.

Nearly a thousand years ago, variola was known to Europe; it was described by the Arabs and Arabists with such exactness as to leave little for their successors to do. Only about fifty years since was the discovery made for the prevention of this disease by vaccination. Do you believe that this discovery is a deduction, a corollary from the ideas which were then held on the nature of the disease? You know too much of the history of the propagation of vaccination to sustain such a heresy. You know too well with what relentlessness and obstinacy

this operation was combatted in the name of the most accredited theories.

Intermittent fevers were known from all antiquity. We find descriptions of them in the works of Hippocrates, and it is probable that the Asclepiadæ diagnosticated these diseases nearly as surely as ourselves. Nevertheless, we cure them incomparably better than they did. Do we owe the perfection of our therapeutics in this respect to more just ideas on the nature of these diseases? You well know the contrary; you know, definitely, that the introduction of the great febrifuge took place in spite of the reigning ideas and theories on this class of affections.

Finally, what disease is better known to us than hydrophobia? We know its origin, how it is communicated to man, the duration of its incubation, its course, symptoms, and infallible termination. It suffices to have seen it once not to confound it with any affection of another species. Nevertheless, its therapeutics is no more advanced than it was two or three thousand years ago.

And you dare affirm that "therapeutical indications are evidently derived from the diagnosis of the disease; that when the nature of the latter is exactly known, it indicates necessarily the remedy."* Never was there a more illusory maxim professed in Medicine. Alas, the contrary is too well proved by the history of our Art. No, the knowledge of the remedy does not flow from the knowledge of the disease, as a conclusion drawn from the premises. Diagnosis constitutes only one of the premises of the Art of curing; the other premise, no less indispensable, is clinical proof. Thus the Asclepiadæ understood very well intermittent fevers; but before clinical proof had sanctioned a mode of treatment, the Art was nearly powerless, science was lame, relatively to this class of affections. Thus, our diagnosis of hydrophobia leaves but little to desire, while our therapeutics is still and will always remain miserable, until clinical proof shall have sanctioned some of the remedies employed in this frightful malady.

According to the opinion of M. Buchez, conformed in this respect to the doctrine of all modern philosophers, you can not foresee the successive effects engendered by the introduction of a therapeutic agent into the animal economy, before the entire succession of these phenomena have been observed once at least, to their full extent.† So much more impossible is it that the diagnosis of a disease, however exact it may be, can enable us to foresee the series of modifications which any given treatment will produce upon this disease before the entire series of

* Essai sur la Philos. Med., p. 321.

† See Fourth Letter.

these modifications have been observed at least once, in their whole extent.

Formerly syphilitic accidents were regarded as the indices of a virus, which must, by all means, be expelled from the economy. Consequently sweating and salivation were induced and continued almost to exhaustion, in the individuals attacked with some of these symptoms; after all this, they were purged. Latterly, some pathologists have pretended that the venereal symptoms are only the product of an irritation or a phlogosis; consequently, they have advised the application of antiphlogistic medication in all cases of this nature. The Homeopaths regard these same accidents as the effects of an impalpable miasm, and feel authorized by this hypothesis to oppose them with spiritualized remedies. Both have deduced, *apriori*, these rules of treatment from their respective ideas on the nature of the malady. Both have followed an equally false route, based on hypothesis. We must not proceed in this way in practical Medicine, but must reason, and conduct ourselves as follows:

The venereal disease is manifested by symptoms which are distinguished now into primitive, secondary and tertiary or constitutional. Experience teaches us that each of these phases requires a different medication. Thus, in the first we employ, sometimes with advantage, astringents or diluant drinks. In the second, the salts of mercury in small doses, aided by opiates or sudorifics, generally succeed best, without producing salivation or any other sensible evacuation. Finally, in the third period, called constitutional, it is proved that the salts of gold and iodine are thus far the most efficacious remedies. Consequently the philosophic physician, who does not exaggerate the limits of our intelligence—who does not suffer himself to be imposed upon by the phantoms of his imagination, will employ each of these remedies established by experience, at the appropriate period of the disease, without troubling himself whether the disease is a product of a virus, an irritation, or a miasm, all of which are impenetrable, both to the senses and to the mind.

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### §III. Second Objection.

If all the physio-pathological theories are only illusory hypotheses, calculated solely to mislead the physician, they should, then, be banished entirely from science, as dangerous, or at least useless fictions. Nevertheless, the absolute exclusion of theories and reasoning appears to be impossible, and there is no example of it in any medical treatise; whence it follows that any doctrine which rests upon such exclusion,

and makes a formal precept of it, is based on an impossibility, that is to say, on error.

Such is the objection unceasingly repeated, under a thousand forms, against Empiricism; and, on this account, this system is not studied thoroughly.* It is accused of proscribing reason, because it desires to suppress its abuse; of rejecting all theories, because it would confine them to natural limits. It is time to make account of this prejudice, the offspring of ignorance and thoughtlessness.

RESPONSE.

It is well understood that when I use the word Empiricism, I do not allude to that practiced in market-houses, or in charlatan's shops, nor to that which exhibits a great display of curative facts in advertisements. These retailers of drugs and possessors of secret remedies and specific treatments, who are generally denominated Empirics, know Empiricism only by its name. But when duly examined, we perceive at once, that they never fail to entice the credulous public by means of some physio-pathological theory, by which they pretend to explain the marvellous effects of their medication. It is only by antiphrasis, therefore, that they are termed *Empirics;* because in reality they are in theory physio-pathologists, in their way.

It is now well understood that we mean rational methodic Empiricism, such as was professed by some of philosophic physicians in the ancient school of Alexandria, and such, especially, as I have heretofore developed. Now, I ask all who have formed the least notion of this doctrine: is reason excluded from it? Is it not, on the contrary, founded on very special, if not very true reasoning? What have I been doing in the whole course of this history, except laying down principles of the highest philosophy, and deducing consequences therefrom? Let our adversaries contest these principles, or the consequences we have drawn from them; this is fair, and it is their privilege. But that they should accuse us of banishing reason, passes all imagination. It is equal to denying the light of the sun, and shows a profound ignorance of the history of medical doctrines.

The reproach that it annihilates the physio-pathological theories, if not entirely true, has at least some claims to truth. Yes, Empiricism does proscribe the intrusion of these theories into thereapeutics; it declares this intrusion to be injurious and illegitimate. This is a fundamental dogma, which I have demonstrated in my Fourth Letter, in such a manner as to leave no doubt in the minds of attentive readers. But rational

* Broussais, in his Examination of Medical Doctrines, devotes to this system only a paragraph of a few lines. See chap. II., p. 35, edition 1821.

Empiricism, or Empiri-methodism, does not exclude in any fashion, physiological and pathological theories from their natural domain, that is to say, from physiology and pathology. I am far from sharing the opinion of Lænnec, who regards these creations of genius as *vain amusements of the mind.* I consider them for my part, as eminently useful inventions, and as indispensable auxiliaries to the human understanding. These physio-pathological theories have not been injurious to Medicine, except in the abuse that has been made of them by the dogmatists, in transporting them from their legitimate domain into that of therapeutics. Some examples will enlighten us on the use of theories in the sciences, and on the danger of their excessive extension.

FIRST EXAMPLE.

An apple becomes detatched spontaneously from its branch and falls to the ground. A pendulum, withdrawn from the vertical line, oscillates for some time. The planets describe around the Sun an ellipsis of which that body is the center. Here are facts which seem to have among themselves no connection, which thus isolated, leave in the memory but a slight trace. But a man of genius conceived the happy idea of connecting these phenomena to an unique cause: he supposed that the apple is drawn toward the earth by an invisible force which he called attraction; that the pendulum oscillates from the same cause, and that the planets are retained in their orbits by a similar force. Observations, experiments, and calculations without number, were undertaken to verify this hypothesis; all seem to confirm it, all lend themselves to this interpretation. From that time, a multitude of phenomena which had been before unnoticed, because they had among themselves no apparent connection, attracted the attention of the learned, became fixed in their memories by means of this artificial bond, and constitute one of the most beautiful conquests of science.

But if, quitting the domain of general physics, we wish to carry the theory of attraction into chemistry, if we pretend to explain by it elementary affinities, we fall into chaos, we abuse the hypothesis. Indeed the theory of Newton supposes no difference in the particles of matter, while chemical affinities are based precisely upon these differences.

SECOND EXAMPLE.

The hypothesis of an interior agent called vital principle, or better, vital force, which, being endowed with an admirable instinct, but not with consciousness, giving impulsion to all the movements of the organized body and directing them to a common end, according to a wonderfully combined plan; this hypothesis, emitted by Hippocrates, exaggerated by Von Helmont, brought back to its true terms, and elevated almost to the degree

of demonstrated truth by the moderns, is unquestionably one of the most beautiful creations of physiological science; without it, a great number of the phenomena of the living economy would remain incomprehensible and without common bond of union.

But when an effort is made to introduce this theory into therapeutics, we arrive, if we wish to be logical, to the negation of the Healing Art: the position of the physician is reduced to a simple contemplation of death, as Asclepiades reproached the Hippocratists of his time. If on the contrary it is sometimes desirable for the physician to interfere actively in disease, he is forced, like Stahl, Barthez and others, to contradict himself continually.*

THIRD EXAMPLE.

Pinel ranked intermittent fevers of the tertian type, in the order of bilious fevers, which he also denominated meningo-gastric; those of the quotidian or quartan, in the order of pituitous or adeno-meningeals; finally, the pernicious intermittents and remittents were classed by him in the order of ataxiæ. Hemorrhage, neuroses, and other periodical affections were disseminated in divers sections. Broussais attached all these morbid forms to phlogosis and especially to gastritis.

Nevertheles, both did not hesitate to combat all these affections with the salts of quinia, contrary to their pathological theories, but in order not to renounce these, they qualified this beneficial medication as *irrational.* Ah, pardon me, illustrious masters, it is not the medication that is irrational under these circumstances, it is yourselves who are so illogical in pretending to unite the disease to the remedy by the bond of induction, while they can be united only by observation and experience.

FOURTH EXAMPLE.

Inflammation, in Latin, *inflammatio,* in Greek, *φλεγμασια,* or *φλογοσις,* is a subject which has excited as much discussion among physicians as the real presence, or sufficient grace, has excited among theologians, with this difference, however, that the disputes of the children of Esculapius have not kindled the flames of the stake, nor excited persecution. Apart from that, they have not been less keen, nor less obstinate; and still, so far from being extinguished, certain authors deny the existence of phlogosis, while others extend this mode of lesion to all pathology. Truth, according to us, is not in any of these extreme opinions.

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* See Second Letter, § 2, also the theory of Barthez, in the body of the work.

In fact, if we go back to the origin of science, we see that the words phlegmasia, phlogosis, and inflammation have been employed on account of the similitude which has been thought to exist between the effects of this disease and those of caloric. Now, here is what has been remarked in regard to the latter: if any part of our body is exposed at a moderate distance to a fire, we feel at first an agreeable warmth. Soon this sensation grows painful, and the part begins to redden. Next we feel a keen sensation of burning, the color becomes of a deeper red, and tumefaction begins. Later, the skin becomes covered with phlyctænæ or bullæ, filled with serosity—the cellular subcutaneous tissue now feels the action of the caloric. Finally, mortification attacks the superficial layers of the tissues, and advances deeper and deeper, until it attacks the deep-seated layers. But if the action of caloric ceases before it causes the mortification, then the affected part recovers its normal state, with or without suppuration, with or without any loss of substance, according to the severity of the burn.

Such is an abridged account, omitting many shades in the succession of phenomena produced by the action of external caloric on any part whatever of the body. Now, as the same phenomenal series may be provoked in the organism by other causes, either internal or external, the name of inflammation was primitively given to the assemblage of three or four of the following symptoms: heat, redness, pain, swelling.

Numerous theories have been emitted on the initial phenomenon, and the mode of generation of the phenomenal series called inflammatory; and the authors or the partisans of these theories have all had the pretention to base on each one of them an anti-phlogistic treatment, which is the cause of the many variations in this treatment.

Finally, in our times, numerous researches and experiments have been undertaken, with a patience and minuteness above all eulogy, in order to seize the intimate molecular transformations which the tissues and living liquids undergo in their passage from a normal to a phlogosed state. Aided by the microscope, physio-chemical analysis, dissections, etc., a sort of scale of phenomenal gradation has been established from simple irritation to confirmed phlegmasia. The caliber of the capillary vessels has been seen to contract at first under the influence of chemical or physical irritants, and dilate again; the movements of the liquids in the same vessels, after a momentary accelleration, move slower, then stop entirely. The serum of the blood transudes the parieties of the vessels, carrying with it the coloring matter in a state of solution, and the globules themselves have been seen to be deformed. The generation of the pus has been observed from its very beginning.

But when we wish to pass from this pathogeny to therapeutics, it is

plain that no rational tie, *perceptible to our understanding*, unites the facts which make up these two departments of Medicine. We are convinced that the most exact and profound knowledge of the series of pathological phenomena can not furnish directly the indication of the most suitable and efficacious remedies, nor can it, in a word, take the place of *therapeutical proof*. The following is an avowal which the most skillful observers do not hesitate to make when they are not blinded by some preconceived theory: "We can not yet, unhappily," says M. Lebert, "construct therapeutics on the basis of scientific Medicine, and with the best intentions in the world, we can regard the greater part of its precepts but as the result of Empiricism."*

I would observe, in connection with this passage, that henceforth therapeutics is established scientifically, not on pathological physiology, according to the desire of M. Hébert, but on another base, more sure and larger, the only one on which all its precepts can rest, namely: experience or rational Empiricism, otherwise called Empiri-methodism. There is not a single rule of therapeutics that can be justified otherwise than by the results of experiment. The precept of reuniting divided parts has been cited as an example of *rational* therapeutics. Now this precept is neither more nor less *rational* than that which directs the use of cinchona in intermittent fever. Why has it been advised to unite divided parts? Because it is known by observation, that in certain cases the divided parts are susceptible of reunion. But there are also cases, unhappily but too numerous, which observation also has made known to us, in which the divided parts can not again be united. Would in this case, the precept to bring them together, be *rational?* No, certainly not, for experience has proven otherwise.

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### IV. Third Objection.

"Empiricism," says Broussais, "consists in finding a remedy appropriate to the disease, without taking the trouble to explain the latter, nor the manner in which it is modified. * * * Anorexia is cured sometimes with water, sometimes with wine, sometimes by purging, at others by fasting, and again by eating food more freely, or of a more exciting character than ordinary, etc. What do then? If we do not wish to reason or form a theory in order to discover which of the means should be employed, it only remains to try first one then the other."†

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* Physiol. Pathol., vol. I, p. 106. Paris, 1846.

† De l'Irritation et de la Folie, p. 56.

I would not have quoted this objection, so trifling does it appear, if it had not emanated from a man who has exercised an incontestable influence on cotemporaneous Medicine; the name of Broussais imposes upon me the obligation not to pass it silently. Nevertheless, I shall be short in my refutation, not being willing to avail myself of all the advantages which the feebleness of the attack affords me.

RESPONSE.

You say that a want of appetite is cured sometimes with water, sometimes with wine, etc. I ask how you have learned that this affection, or if you like it better, this symptom, may be treated by means so diverse, and often so opposite? Is it not by observation, and observation alone? What physio-pathological theory could have suggested such a great variety of treatments, applicable to a disease always the same in appearance? None; it is clinical observation only which has furnished us with this notion.

You add, if we do not wish to reason or form a theory, in order to discover which of these means should be adopted, it only remains to try them successively. I pass the common accusation of want of reasoning, with which the partisans of Empiricism are charged—an accusation unworthy of Broussais, who knew, definitely, that the Empirics do not neglect reasoning—an accusation which has already been sufficiently refuted, and I come to his conclusion, that we are compelled to try all methods of treatment successively, if we have no physio-pathological theory to guide us, and reply:

Yes, certainly, we are obliged to attempt successively all medications, if after the example of certain reformers we take no account of the observations of our predecessors—if it be pretended to form science anew, from its base to its top stone; but such has never been the pretension of the Empiri-methodists, and the first physicians who assumed the title of Empirics in the school of Alexandria, have left us very wise rules by which to discern the degree of confidence which should be accorded to the observations of others—which proves that they did not disdain to make use of them.

Thus, then, from whatever point of view we study therapeutics, in generalities or in details, always and everywhere, induction must be subordinate to experience; the rules of treatment must have received the sanction of clinical proof, before obtaining citizenship in the science.

# NINTH LETTER.

ON THE RANK THAT MEDICINE SHOULD OCCUPY IN A GENERAL SYSTEM OF HUMAN KNOWLEDGE, AND THE DEGREE OF CERTAINTY WHICH IT CAN ATTAIN.

## § I. Propriety of this Inquiry.

After having assigned to each of the branches of Medicine its proper place, having had regard to the importance of its influence for the realization of the final aim of this science—the curing of maladies; after having demonstrated, contrary to the opinion of a great number of theorists, that, in this respect, therapeutics holds the first rank, and that pathology, anatomy, physiology, etc., follow as auxiliaries; after having, in short, brought forth medical practice from the chaos into which it was plunged, by re-establishing the true theory of the Healing Art, misunderstood and misrepresented for twenty centuries, I think it will not be improper to examine what place Medicine should occupy in a systematic classification of all the sciences, and what degree of certainty it is susceptible of attaining. This research constitutes, it seems to me, the supreme complement of all medical doctrine and should close properly this epistolary series.

Nevertheless, I am not ignorant how little the present epoch is favorable to philosophic dissertations; that in the midst of a society disturbed like ours, and menaced in its foundations, physicians can only lend a distracted ear to questions of pure theory, the examination of which requires calmness, security, and leisure. Moreover, I will not abuse the patience of my readers; I shall attempt to say only what is absolutely indispensable for the solution of the problems announced at the head of this letter. In this manner I pretend to recognize the kind reception which has been given to my philosophic lucubrations, and to testify my gratitute in particular to the honorable *confrere* who directs with so much impartiality and discernment the publication of this estimable journal.*

Being obliged to glance at the diverse opinions of philosophy, concerning the origin of our acquirements, their degree of certainty, and the

* L'Union Medicale.

various modes of acquisition of our understanding, I shall divide my subject into two parts—one historical, the other critical and dogmatical.

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PART FIRST.—*A Historical Resumé of the Opinions which have been emitted on the Origin of Ideas, and their Modes of Development.*

## § II. ANTIQUE PERIOD.

### RATIONALISM.

The first philosopher whose writings have come down to us in a sufficient state of entirety to give a just idea of his doctrine is Plato, the elegant disciple of the sage Socrates, who from the charms of his conversation and the gracefulness of his style, was surnamed the Swan of the Academy. He thought that the knowledge which we acquire in this world is only the feeble rays of the light that our soul possessed before its union with the body, and he was persuaded that the best means to find truth consists in isolating ourselves as much as possible by meditation, from the influence of the senses and exterior objects, in order to put ourselves in direct communication with the intimate nature of things by mental intuition. "The soul," he says, "never thinks better than when it is undisturbed by sight, pain, or voluptuousness, and when, shut up within itself, disdaining as much as possible all commerce with the body, it grasps directly what it desires to know. ⁂ ⁂ ⁂ ⁂ Indeed, the body involves us in a thousand embarrassments, owing to the necessity of our cares for it. Added to this, diseases which spring up obstruct our researches. They fill us with passions, desires, fears, a thousand chimeras and follies, to such an extent that in fact they leave us, as has been said, not one hour for wisdom. ⁂ ⁂ ⁂ ⁂ It is thus demonstrated that in order to know a thing thoroughly we must, so to say. separate ourselves from the body, that the soul may examine them in themselves.[⁂]"

### ON SENSITISM.

Aristotle, cotemporary with Plato, was one of his most assiduous auditors during twenty years; after which he became the chief of a school. Now, he professed an opinion entirely contrary to that of his master, on the origin of our ideas. According to him, all animals have received from nature the faculty of feeling and judging; but after the sensation has been produced some preserve the remembrance of it, while others do not. Those whose souls retain some trace of the received

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[⁂] Phedon. French translation, of Cousin, p. 202–204.

impressions, can in the course of a great number of sensations, reason from the recollection of them which remains. This explains how the memory arises from the faculty of feeling. The memory of the same thing often repeated, produces experience; and experience, that is to say, every general notion which is fixed in the soul, relatively to what is common to several things, is the principle of Science and Art. The first ideas which the sensations create in our minds are always ideas of totality, or very general ideas. Subsequently, in proportion as the same sensations are reiterated, they become more distinct, and more and more special.*

Aristotle insists very much on this proposition, that the first ideas which arise in our minds by the intervention of the senses, are always very general ideas. They form a fundamental basis for his scientific method; and he supports this by examples and reasoning which he thinks invulnerable. If a man, he says in one place, perceives an object at a distance, he will have at first the idea of a body in general. If the object gradually approaches him, and he sees it advance with an automatical motion, his general idea of a body will change to the less general one of an animal; subsequently, to that of an animal of some particular species; then finally, the object coming very close, he will distinguish it from all others, he will in short, obtain an individual idea. Elsewhere he cites the example of a little child, who calls, at first, every man *papa*, and every woman *mama;* afterward, as he grows older, his ideas become special, he learns to discern his father and his mother from all other persons.

Such is, according to this philosopher, the gradation of our ideas, and on this basis he establishes a scientific method, which all antiquity adopted; a method which consists in commencing the study and the teaching of any science whatever by generalities, which are also called principles, or elements.

It must be borne in mind, that the argumentations of the chief of the Peripatetics, and the examples with which he sustains them, are extremely captious. It would be very difficult for us to-day to show its artifice, if Locke and Condillac had not demonstrated, absolutely, that the first ideas excited in us by the sensations are always individual in their character: if they had not taught us by their learned analyses of the operations of the understanding, how our mind rises from individual to general ideas, and in what respect these differ from vague and indistinct ideas, with which Aristotle confounds them in the examples

* Aristotelis Opera Omnia quæ extant Græce et Latine. Authore Guillemo Duval. Analyticorum Posteriorum, lib. II., cap. XIX. De Principibus Naturalibus, lib. I., cap. I. Metaphysicorum, lib. I., cap. I.; et alibi passim.

above given. But the ancients, deprived of the lights of modern metaphysics, could not shake off the yoke of the Peripatetic method, whose prestige was maintained down to an epoch very near our own.

In Peripateticism, the sensations, though forming the point of departure of our acquirements, are not considered as our only instruments in intellectual progress; they constitute only the materials of thought, and reason maintains there her supremacy over the other faculties of the soul. She has the task of elaborating and setting in order the materials for the construction of the scientific edifice.

It is not entirely the same in the system of Epicurus, if we may credit his elegant Latin interpreter. According to him, the sensations are all produced by images or shadows, extremely delicate, which, detached from the surfaces of bodies, or spontaneously formed, float in space, and impress our senses. The senses never mislead us; truth has no surer foundation than their authority, and our existence depends on the exactness of their impressions. When we form false judgments, it is reason alone which is misled in its operations.* Here, as is plain, the theory of Sensitism is pushed to its extreme limits, and forms the most complete antagonism with the doctrine of Plato.

### ON ECLECTICISM.

Potamo, who lived at Alexandria about the first century of the Christian era, that is to say, at an epoch when philosophic disputes were very animated, having recognised, or supposed that he recognised, that none of the systems proclaimed with so much warmth by the contending sects were entirely true, though each contained a portion of truth mingled with many errors, thought that wisdom consisted in not attaching himself exclusively to any of the prevailing doctrines, but to extract from each one what he judged most conformable to experience and reason. History does not say whether he reduced this manner of philosophizing to a system, nor that he gained disciples. However this may be, he was considered as the founder of Eclecticism, or Syncretism, a method which had among the ancients many partizans, but whose sectators never formed a school, properly said, because they never adopted a precise formula, or common symbol of doctrine.

### SKEPTICISM.

I shall not pause to examine Skepticism, because absolute and universal doubt appears to me less a scientific doctrine than the negation of any species of knowledge. The reasoning of the Pyrrhoneans does not merit, in my opinion, any serious refutation; because it offers, according

* Lucretius, Poeme de Natura Rerum, chant IV.

to the avowal of its own philosophers, no character of certainty. I will content myself, then, with repeating with Lucretius,

*Denique, nil sciri si quis putat, id quoque nescit*
*An sciri possit; quoniam nil scire fatetur.*

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## § III. Middle Period.

### SUPERNATURALISM.

To the two modes of intellectual acquisition admitted by philosophers, the fathers of the Christian Church have added a third, which they considered as the surest and the only infallible one. This mode which is called revelation or supernaturalism, consists in the direct communication which God has made to man, of certain truths, which could not have been discovered by the mere lights of reason. Nevertheless, philosophy does not abdicate entirely its rights to examine these lofty truths; for while their celestial origin is proclaimed, they present several points which were evidently the offspring of human reason; thus it might be, and has been asked indeed, by what signs are we to recognise that any revelation is really divine; how can we assure ourselves that a given proposition comes from a supernatural source, etc. Now, it is evident that all these questions are within the competency of philosophy. Thus many ancient fathers of the Church studied the Greek philosophers, and endeavored to conciliate, at least in part, the doctrines of these philosophers with the dogmas of religion. Of this number were Justin the Martyr, Saint Clement of Alexandria, Saint Origen, and Saint Augustine. Others, however, such as Quintillian, Arnobus, and Lactantius, did not consent to this plan, and regarded the study of philosophy as superfluous and dangerous.

### ON SCHOLASTICS.

In the ages of barbarism and ignorance which followed the establishment of the Christian religion, in the midst of the long perturbations kept up by the dismembering of the Græco-Roman Empire, and the establishment of new states, the taste for letters and philosophy sensibly declined; the writings of the philosophers, buried under the dust of libraries, remained there unknown even to their owners; and when Charlemagne instituted those numerous schools which became afterward universities, the only remains of ancient philosophy which had not been entirely forgotten were the metaphysics and logic of Aristotle. During that indefinite lapse of centuries, which is called the Middle Ages, the ecclesiastics, who were the sole depositories of the treasures

of human knowledge, employed at first Peripatetic dialectics, in their essays on moral truths and the dogmas of religion. Subsequently they supposed they could reach by the same way, that is to say, by pure discussion and reason, the discovery of natural laws and the solution of all the problems of the physical sciences.

They usually proceeded as follows: they laid down some axioms or universal principles of metaphysics, whence they drew by a series of arguments, the explanation of all the phenomena of nature. This method of philosophizing was called *scholastic*, from the name of the schools where it originated and where it was employed until very recently.

It required many years, many efforts, and many contests, before the human mind could disengage itself from the shackles of this vicious method, which was still so much credited at the close of the sixteenth century, that Ramus, or La Ramée, professor in the University of Paris, exposed himself to the rudest persecutions for having dared criticise it.

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## §IV. Third Period.

### Revival of Philosophy.

I will not attempt to retrace even succintly, the admirable concourse of circumstances which prepared the freedom of thought; the discoveries in the sciences and arts, the restoration of the literary monuments of antiquity by the art of printing, the uprising of public opinion against the abuse of the power of the clergy and the feudal nobles, etc.; all this would require, even to be sketched only, much more space than I have at my disposal. I come then, without preamble, to the revival of philosophy, which includes in it the whole progress of the human mind.

In the first half of the seventeenth century, two men of a character and genius quite different, started from opposite points, the one from sensation, the other from mental intuition, to rebuild the entire edifice of science. They agreed, however, in this, that each one should reject equually the lumber of the scholastic method, and create his own method. The first, replete in the knowledge of statesmanship, having filled the highest places in the state, substituted induction for syllogism as the habitual form of reasoning, and proclaimed the sovereignty of experience as the scientific criterion and the true means of discoveries. The second, on the contrary, withdrawing from the world and its honors, a friend of solitude and meditation, a mind eminently generalizing, who, though still young, had acquired great renown by his discoveries in

mathematics, replaced all the complicated rules of the Peripatetic dialectics by a single one, admitting as characteristic of truth, *evidence* alone. The reader has already anticipated the names of Francis Bacon and René Descartes, the two restorers of the philosophy of modern times.

### ON SENSITISM.

Bacon, like Aristotle, placed the source of our knowledge in the faculty of feeling; but he maintained contrarily to the latter, that the sensitive impressions give rise at first to particular ideas, and not to general ones. Thus, though adopting the scientific basis of the philosopher of Stagyrus, he separates at once from him, to follow another route, entirely different. The chief of the Peripatetics wished to begin science by the most general and abstract notions, named therefore by him principles or elements. The English philosopher protested on the contrary, with all his might, against this course; he assumed that our minds can never suddenly rise at a single bound from individual ideas, excited by the senses, to axioms or general principles. He insists that progress should be gradual, and not by leaps; that we should pass from a particular idea to one that is somewhat general; from this to another, more general, and so on, till we reach the universal axioms, which should be, he says, the last ones laid down. Bacon insists obstinately on this method; he recommends it constantly; he renews its exposition in various ways, in various terms, in several portions of his books, for fear that it might not be sufficiently comprehended or appreciated; he exalts its value much above all particular discoveries.

Posterity has confirmed the judgment of Bacon on the excellency of his method, which has been adopted and improved by learned men and thinkers of the first order, and which has contributed much to the progress of the human understanding, especially in the physical sciences.

John Locke enlarged and cleared the route, which Bacon has merely indicated by land marks. He showed by what series of acts the mind rises from a sensation, which furnishes it a simple or individual idea, to complex or compound ideas; how we form, by abstraction, general ideas, ideas of species, genera, or classes. He made excellent observations on the nature, formation, and errors of language, refuted the Platonic doctrine of innate ideas, and admitted with Aristotle and Bacon, sensitive impressions as the only basis of our knowledge. He endeavored to demonstrate empirically, that is to say by the testimony of the senses, the existence of God, His attributes, the immortality of the soul, in a word, all the truths of natural religion and morals.

Stephen Bonnot de Condillac was, in France, the extreme representative of Sensitism; he supposed that all the faculties of the soul, and all

its determinations are derived from the faculty of feeling. According to this metaphysician, attention is nothing more than a prolonged sensation, which effaces all others for the moment; that comparison and judgment consist in two sensations, which are realized simultaneously, or are united in the memory as if they were really simultaneous; and so on for the other intellectual faculties. The acts of the will he represented as proceeding from the same origin. Thus the sensations, which, considered as representations of objects, are the source of ideas, become the source of all the acts of the will, accordingly as they effect us agreeably or disagreeably. Hence arise, following this theory, our diseases, our habitudes, our vices and our virtues.

No one in France has contributed as much as Condillac to popularize the taste for philosophic studies, by his clearness and connection of ideas. But does he not turn these studies from their true object in making the supreme perfection of the sciences to consist in the mere perfection of the signs of language? Is it not evident that he mistakes the effect for the cause, when he attributes the exactness of reasoning in mathematics to the exactness of algebraic language? This grave mistake has not a little contributed to perpetuate in the schools, and among the learned societies, those vain disputes on words, which he had himself so much blamed.

Condillac, like Locke, endeavors to derive moral and religions ideas from sensation; but other philosophers deduced from these, no less successfully, the destruction of these same ideas. Thomas Hobbs, David Hume, Charles Bonnet, Claude Adrian Helvetius, and others, have proved victoriously, that the theory of sensations is not unfavorable to skepticism, materialism, and atheism.

### ON RATIONALISM.

Descartes perceived, early, that the instruction he had received in the schools or drawn from books, under the name of philosophy, was nothing more than a scaffolding of words, or an art of speaking without judgment, as he said, on things of which we are ignorant. His mind, habituated to the exact researches of mathematics, could not be contented with a science so visionary; consequently he resolved to reconstruct it from top to bottom. To this end, he commenced by erasing everything which he had learned, excepting from his philosophic doubt, but the practical truths whose application, he said, could not be dispensed with.

Then he laid down, as the basis of his scientific edifice, this fact, incontestable to every reflective mind: "*I think;*" that is to say, I have conscience of my thought; from which he drew at once this conclusion, no less incontestable: "*therefore I exist.*" This is as much

as to say: there is in me a thinking substance, which I call soul; a substance essentially distinct from matter; a substance, in fine, the reality of which is clearer and more evident to my mind than that of my body, and all exterior objects. This soul, whose essence consists in thought, finds in itself the innate idea of a being or a spirit, absolute, unlimited in its attributes—on the infallibility of which, the certainty of all our knowledge rests.

As long as this philosopher did not go beyond the sphere of pschychological phenomena, his propositions are linked, naturally; but when he endeavors to pass into the domain of natural phenomena, it seems as if the route was closed to him—he is obliged to have recourse to hypotheses which are entirely arbitrary. Thus he supposes, in physics, that matter is not endowed with any activity, which is contrary to all observations. In physiology, after saying that the soul is present in all parts of the body, he assigns to it, for a special seat, the pineal gland; he puts at its disposal a host of animal spirits—a species of intelligent messengers —who go and come from one extremity of its organic empire to the other, either to carry its orders or to bring back intelligence of what is going on.*

Notwithstanding his errors, Descartes influenced in a powerful manner the progress of the human understanding; he gave, as was said, the death-blow to the scholastics. The clearness of his conceptions, the boldness of his hypotheses, excited the mind to think for itself, and cast off the prejudices of a scholastic education. A great number of learned men studied his doctrine, either to develop and defend it, as Nicole, Pascal, Spinosa, Malebranche, or to combat it, as Gassendi, Hobbes, and others.

Godfried Wilhelm Leibnitz, one of the most universal geniuses of modern times, attempted to put an end to the disputes of the various philosophic schools, by uniting all their doctrines into one, which should retain what was true in all, and reject what was false or hypothetical. He proceeded to the execution of his vast project by the speculative method of Descartes, whose philosophy he called the antechamber of truth, while he had little regard for the empirical method of Locke. Like the French philosopher, he placed in God the foundation of all reality, all knowledge, and all certainty. He admits innate ideas, not as present to consciousness from birth, but as allied to our intellectual constitution by a necessary relationship. He accords to matter only the force of inertia, or resistance, and to explain the active forces with which bodies appear endowed, he supposes that each of them is only the natural

* Œuvres de Philosophique.

evolution of a *monad*, or a simple, indivisible, imperishable, and, in some sort, spiritual molecule, which is the motor of all the spontaneous developments of tangible bodies—the source of all active properties, and which reflects in miniature the entire universe.

The philosophy of Leibnitz, though more comprehensive than that of Descartes, is not less hypothetical, as is seen, nor less distant from the results of daily observation.

Emanuel Kant, before engaging in the researches of ontology, endeavored to determine the laws and the limits of our faculty to acquire, in order to avoid the principal cause of error of human reason, which cause resides in the almost irresistible inclination which we have to pass, continually, the limits within which the Author of nature has confined our understanding. Consequently he applied himself with rare sagacity and perseverence to discern knowledge rational, or *a priori*, and knowledge empirical, or *a posteriori*. Here is a resumé of his doctrine on this subject:

Observation teaches us with certainty that a thing exists in such or such a manner; but it does not teach us that it could not possibly exist otherwise. Its judgments are never strictly universal; they possess but a conditional generality; which means that no one has remarked to the present, an exception to a given law of nature, as, for example, to the following: all bodies have weight. On the contrary, a judgment applied with rigorous universality, that is to say, in a manner which admits of no exception, cannot come from experience, but is absolutely *a priori*. Such are the following propositions: Two quantities equal to a third, are equal to each other. Nothing happens without a cause. Thus necessity and universality are the characteristics of all *rational* or *a priori* knowledge. Contingency and limitation form the essential character of all empirical or *a posteriori* knowledge.

Fichte and Schelling, who have followed Kant in the speculative route, appear to have had as a principal aim, to found ontology on an immutable basis by demonstrating the objective reality of the conceptions of the understanding. Have they succeeded in this great enterprize? This is a question which I shall not undertake to examine here, for it is much more pertinent to metaphysics and morals than to the physical sciences, of which Medicine forms a part. Besides, the response to such a question surpasses very much my abilities: *Non nostrum tantam componere litem.*

### ON COMMON SENSE AND SENTIMENT, CONSIDERED AS A MEANS OF KNOWLEDGE.

Neither the exclusive Sensitists, nor the pure Rationalists having been able to construct an entire system of knowledge which would

satisfy equally observation and reason, some philosophers flattered themselves to have found in common sense, or universal sentiment, a surer guide, an infallible criterion of truth. The Irishman Hutcheson, was one of the first who emitted this opinion, but it owes its principal luster and the notice of the learned world, to the labors of several Scotch philosophers, at the head of whom it has been usual to place Thomas Reid, which has given to the doctrine itself the name of *Scotch School.*

These learned men, seeing that the most common truths in morals and experience were shaken by the speculations of certain philosophers, and desiring to establish them on an unapproachable base, supposed man to be endowed with a moral sense, a sort of spiritual instinct, which leads him naturally to truth and to correct action, which inspires him only with sound judgments, when he does not choke this interior voice by prejudices and bad passions. According to this theory, the common sense of humanity, that is to say, instinct, considered in its most general and most irresistible manifestations, is a certain principle of knowledge, an infallible criterion of truth. Among the writers who in other countries have contributed to popularize this doctrine, we must name J. J. Rousseau, in France, and Henry Jacobi, in Germany.

### ECLECTICISM.

There have always been Eclectics, that is to say, learned men who, instead of endeavoring to distinguish themselves by the invention of some new system, have been content to extract from each of the cotemporaneous systems as much truth as in their eyes was contained in them, and to stitch together these various pieces, in order to form a body of doctrine which would represent as exactly as possible the sum of the acquisitions of the human understanding at a given epoch. In this way Fernel, at the commencement of the sixteenth century, united with much skill the theory of Plato to that of Aristotle; thus also, in our days, a professor in the University of Paris has offered to his auditors the resumé of modern philosophic opinions in a highly critical work, of which the following is the substance, as condensed by himself:

"The eighteenth century," he says, "has left us a heritage of three grand schools, which remain to this time: the French and English school, of which Locke is the chief, and of which Condillac is among us the most accredited representative; the Scotch school, which presents so many illustrious names, Hutcheson, Smith, Reid, and Dugald Stewart; the German school, or rather the school of Kant, for of all the philosophers beyond the Rhine, he of Kœnigsberg is about the only one who appertains to history.

"But this is only an ethnographical enumeration of the schools of the eighteenth century. It is especially necessary to consider them in their analogous or opposite characters. The Anglo-French school represents particularly *Empiricism* or *Sensualism;* that is to say, an almost exclusive importance is attributed in all departments of human knowledge to experience in general, and especially the experience of the senses. The Scotch school and the German school represent a spiritualism more or less developed. Finally, there are philosophers who, denying the supremacy of the senses and reason, seek in the sentiment the true guide and light of intellectual and moral life; for example, Rousseau, in France, Smith and Hutcheson, in Scotland, and Jacobi, in Germany. Such are the philosophic schools which prevailed in the eighteenth century.

"Is the truth to be found in either of these schools exclusively? We are compelled to say that neither of them contains, in our eyes, truth in full. We are convinced that a considerable part of knowledge escapes the sensations, and we believe sentiment is not a basis firm enough or large enough to sustain human science. We are then rather the adversaries than the partisans of the school of Locke and Condillac, and of that of Hutcheson and Jacobi.

"In general, in the history of philosophy, we are in favor of all those systems which favor reason; thus, for antiquity, we hold to Plato rather than to Aristotle; among moderns, we are for Descartes against Locke; and in the eighteenth century, for Reid against Hume, for Kant against Condillac and Jacobi. But at the same time, while we recognize reason as a force superior to sensation and sentiment, as being *par excellence* the faculty of knowing, the faculty of truth, and beauty, and all good, we are persuaded that reason can not develop itself under conditions which are foreign to it, nor suffice for the government of man, without another power; this power, which is not reason itself, and which it can not reject, is sentiment; the conditions without which reason can not develop itself, are the senses. We now see how important to us are sensations and sentiment; how, consequently, it is impossible for us to condemn, absolutely, either the philosophy of sensation or that of sentiment."*

I pray the reader to excuse me for the extent of this quotation. Nevertheless, I am persuaded, that after having read it, he will thank me for not having abridged it; for it offers, as briefly as possible, an *exposé*, nearly complete, of the philosophic doctrine called Eclecticism.

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* Cousin:—Cours de l'Histoire de la Philosophie Moderne, vol. II, p. 366, ed. 1836.

PART SECOND.—*A Critical and Dogmatical Examination of the various Systems of Philosophy abovementioned.*

§ V.

The fragment which I have just reported, simplifies and will abridge singularly the second part of this letter. The appreciation which is found there, of modern systems of philosophy, appears to me perfectly just, and I would give to it my full assent, if the author had better explained the nature and special destination of each of these faculties of the understanding which he presents as a principle of knowledge, namely: *common sense,* or *the sentiment, sensation, and pure reason.*

ON INSTINCT—THE PRINCIPLE OF SENTIMENT AND COMMON SENSE.

When we reflect on the manifestations of this faculty which the philosophers of the Scotch school name *common sense,* and which others name *sentiment,* we find that it has no other source than *instinct,* that is to say, that innate light, that natural aptitude for certain acts, which develops itself spontaneously among animals as well as among men, from the first moment of their birth, or at determined periods of their existence. Instinct suffices for the common needs of life; it is the principle of the most natural sentiments, it guides us before experience and reason are yet formed, it furnishes us sometimes the promptest inspirations, surer even than the teachings of experience and reason. It is not susceptible either of memory or education, according to physiologists, and should not be consequently ranked among the number of the philosophic faculties, that is to say, those which are perfectible.

"A complete opposition," says M. Flourons, the interpreter of Frederic Cuvier, "separates instinct from intelligence. In instinct all is blind, necessary and invariable: in intelligence all is elective, conditional and modifiable. The beaver who builds his cabin, the bird who constructs her nest, act only from instinct. The dog and the horse, who learn even the signification of many of our words, and who obey us, do so by intelligence. All in instinct is innate: the beaver builds without having learned it; all in him is fated; he builds in a masterly manner, from a constantly irresistible impulse. In intelligence, all results from experience and observation: the dog obeys only because he has been taught; all this is free; he obeys only because he wills it. There are, then, in animals, two distinct and primitive forces: *instinct* and *intelligence.*"*

* De l' Instinct et de l' Intélligence des Animaux. Resumé of the observations of F. Cuvier on this subject, by M. Flourons: 2 ed., p. 46.

### ON SENSATION, THE PRINCIPLE OF EXPERIENCE.

We have seen how Aristotle supposed experience to be derived from sensation. He thought that the first ideas which the senses awaken in us are very general ideas. We have seen afterward how Bacon, Locke, and other modern sensitists, refuted this opinion, and showed the true gradation of sensible ideas, the real developement of the experimental or empirical method.

But, when these attempted to elevate themselves by this way to supra-sensible things; when they would establish on this base the demonstration of universal and necessary truths, the existence of natural religion and morals, they were not able to do it on a solid basis. Their proofs and their arguments vanished in the light of vigorous argumentation, as the cloudy vapor disappears under the rays of the sun. By endeavoring to establish morals on sensible ideas exclusively, they disturbed them, they opened the door, unknowingly, to skepticism, materialism, and atheism.

The domain of knowledge which is derived from sensation, is vast enough, without any one attempting to extend it beyond its natural limits; for it embraces all the sciences which are occupied with the laws of matter, whether organized or unorganized; it comprehends physics, properly said, natural history, chemistry, medicine, etc.; all the arts and trades are in its dependence. These are the sciences whose principle lies in the faculty of sensation, which grow by observation or experience, and must be cultivated by the empirical method.

### ON REFLECTION OR CONSCIOUSNESS, THE PRINCIPLE OF PURE REASON.

The human mind possesses the faculty of isolating itself from all exterior sensation, to fall back upon itself and contemplate its own functions. This faculty, which is named *reflection* or *consciousness*, is the source of the most sublime knowledge; for it is by this that man rises to ideas of the absolute, the necessary, the universal, the infinite, the good, or the evil; in a word, to all the notions which constitute the exclusive domain of *pure reason*. The sciences which are derived directly from it, are, logic, metaphysics, and morals. This faculty alone puts an immeasurable distance between the human species and the animal species nearest in the scale to man, in the language of the physiologist, the most competent:

"Animals," say F. Cuvier and Flourons, "receive by their senses impressions similar to those which we receive by ours; they preserve, like us, the trace of these impressions; these preserved impressions form for them, as for us, numerous and varied associations; they combine and deduce relations and judgment from them; they possess, therefore, intelligence. But all their intelligence is reduced to what is said of it

above. The intelligence which they possess does not consider itself, does not see itself, dses not know itself. They possess, therefore, no *reflection*, that faculty which the human mind possesses, with which to study itself. Reflection, thus defined, is therefore the limit which separates the intelligence of man from that of animals. * * * Man is the only one of created beings to whom the power has been given to feel that he feels, to know that he knows, and to think that he thinks." *

The philosophers who have endeavored to study the material world by the speculative method, or pure reason, without the aid of experience—such as Plato, Descartes, Malebranche, Leibnitz, and others—have only succeeded in making a fantastic and imaginary world, on the model of their supra-sensible ideas. Sometimes they have refused to matter every species of force or activity; sometimes they have despoiled it of its existence even; they have pushed on blindly to the denial of the reality of bodies; in a word, they have found nothing reasonable, concerning the objects which fall under the senses. As a compensation, they are sublime and admirable, when speaking of supra-sensible things; they have developed with a superior logic the soundest ideas touching religion and morals.

### ECLECTIC DOGMATISM.

We see from what has already been stated that certain philosophers were led astray by endeavoring to rise, by ideas derived from sensations, to the most abstract thoughts of the human mind, and others by attempting to deduce the laws and properties of matter from pure perceptions of the mind. Rationalists and Sensitists have all committed the same fault; all have interrogated a faculty of the soul on objects with which this faculty is not connected. Is it astonishing, then, that they have both fallen into palpable errors—errors which shock common sense?

May we not represent sensation and reflection as two windows, one of which opens on the natural or sensible world, and the other on the immaterial or supra-sensible world. As long as our minds abstain from looking through but one of these windows, it sees necessarily but one world; it acquires only one kind of ideas, and it is led naturally to doubt the reality of the other world, to deny the existence of the other order of ideas. Wisdom consists, then, when we wish to make discoveries in a science, in examining without prejudice what order of ideas this science developes, in order to make choice of the method which is best adapted to it.

By a unique privilege mathematics includes the two grand orders of ideas which divide the intellectual sphere of man. It realizes, in some

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* Pages 49 and 50.

sort, the union of spirit with matter; on this account they may be studied either by the speculative or by the sensitist method. The mathematician can at his pleasure materialize his abstract conceptions, by the aid of signs, or idealize sensible results, and generalize particular observations, by means of formula. On this account mathematical propositions have a character of certainty which is not found in any other science, and for this reason they irresistibly convince the mind. Taking hold of it by the way of speculation and experience, they leave no door open to doubt or uncertainty.

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### § VI. Classification of Medicine in a General System of Sciences.

From what has been said nothing is easier than to determine to what order of ideas medical science belongs, and what method of study is most appropriate to its advancement. No one, I presume, will attempt to class it with sciences purely rational, as metaphysics; but every body will agree to rank it among the sciences which treat of sensible objects, as physics, chemistry, etc. Now the method which succeeds best in this order of knowledge, the one which the great observers of all times have followed, according to common opinion and the testimony of history, is that which is called by modern philosophers, indifferently, experimental or empirical, and consists, as we have already said, in abstracting by thought what belongs in common to the particular facts furnished by observation, in order to form at first generalities of a limited kind, then rising afterward by gradations to other generalities, more and more vast and more and more abstract.

The other method, on the contrary, that is, the one which proceeds from generalities to particulars, from axioms to consequences, may find its application in the teaching of Medicine, whenever the question is not one of discoveries to be made, but of pure and simple exposition of knowledge already acquired.

#### On Hypothesis.

We have admitted hypothesis in physiology and in pathology as a means of uniting and co-ordinating phenomena among themselves, which without some artificial bond of union would remain isolated from each other, and would have no connection perceptible by our senses or reason, and therefore would escape too easily from the memory. But we have added, and cannot too often repeat, that a physio-pathological hypothesis should never be the basis of treatment. It can, at most, be tolerated as a provisional motive of a therapeutical essay, before experience has spoken; even then, however, it is not without danger, though limited

to this transitory use; it would be better to experiment without any preconceived idea. Thus comprehended, hypothesis conforms to the analogism of the ancient Empirics; but in no case should it form any part of therapeutics, constituted as a science.

I am reproached for pulling down medical practice and reducing it to a state of pure empiricism; my brethren who have offered this objection deceive themselves, because they attach to the word *empiricism* a trival and abusive sense, which is not that of philosophic language. Should I, from a regard to a vulgar prejudice, abstain from an exact and established expression, and replace it by some one of the common epithets with which so many writers clothe their medical theories? I have not thought so; I think I have made enough concession to this prejudice in adding to the word empiricism the epithet *methodic*, to distinguish it from that ignorant and blind empiricism with which a careless reader might have confounded it.

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## § VII. On Certainty in Medicine.

Philosophers distinguish two species of certainty, metaphysical certainty and empirical or experimental certainty. The first admits not even the possibility of an exception; thus, the following propositions have a metaphysical certainty: *two quantities equal to a third are equal to each other; a straight line is the shortest distance between two points; nothing happens without a cause.* Empirical certainty exists wherever the terms of a proposition express an idea to which there is no known exception. Thus, *all bodies have weight—the earth turns incessantly around the sun*—are propositions which offer an example of empirical certainty.

We see by these examples, that the word certainty, taken in its rigorous philosophic acceptation, does not admit of degrees. A thing is certain or it is not—this is all; but we cannot say that it may be more or less certain, little certain, or very certain. On the contrary, in common language, the word certainty, being synonymous with probability, admits of numerous degrees and shades, and it is in this last sense that we inquire into the degree of certainty of Medicine.

Cabanis, who felt how much it is necessary for the success of practical medicine that the physician and the patient have a reasonable faith in the efficacy of the Art; in order that the former embrace the study and practice of his profession with that conscientious zeal which can alone enable him to surmount the difficulties; and that the latter execute the prescriptions of science with that confident submission and

exactness which procures most frequently success; Cabanis, I say, has devoted a long memoir to the discussion of the question of *certainty in Medicine;* and Broussais, following in his track, has treated the same subject in nearly the same manner. The plan adopted by these authors would carry us too far; I am obliged to restrain myself in much narrower limits—but I hope I reach the same end by a much shorter way, by looking only on the practical side of the question.

In what respect is it important both to physician and patient, to know the degree of certainty in Medicine? Is it not in order to be assured whether it would be better to abandon diseases to the sole resources of nature, or to treat them conformably to the rules of Art? Every one will agree that this is the only useful side of this discussion, and the writers who have agitated it, have not treated it from any other point of view, whether they have decided in favor of or against science.

Reduced to these terms, the question of the certainty of Medicine seems to me easy to resolve; indeed, if I consult history, I find that no nation, civilized or savage, has ever been without some kind of Medicine either learned or ignorant, natural or superstitious. If I interrogate common sense and the intimate sentiment, I find that it is impossible for a man who suffers, to keep himself perfectly quiet, without asking any relief of the experience of his fellows, as has been advised by certain very stoical philosophers. The most obstinate skeptics, the most violent detractors of the Healing Art, if they dislocate an arm or break a leg, do not hesitate to call in the assistance of the surgeon, or even a bone-setter. Where is the man, who, seeing an infant attacked with convulsions, or an old man fall down paralysed, would not call a physician? Did Montaigne and J. J. Rousseau, those two lovers of paradox, who were both afflicted with the gravel, deprive themselves of the aid of surgery when they could not urinate?

### FIRST OBJECTION.

But, reply those who are very incredulous in regard to medicine, if there are cases where the intervention of art is indispensable, and truly efficacious, in how many other cases has not this intervention been more injurious than useful? How can we definitely establish the balance between the good, and the evil which results from it?

### REPLY.

Since you are forced to admit that the intervention of art is sometimes useful and necessary, who shall decide properly on the opportunity or inopportunity of this intervention? The man who is most familiar with the resources of art, or he who is completely ignorant of them?

Would you call a mason to decide whether a luxation is reducible, or if a fracture of the cranium requires the operation of trephining? Would you ask an engineer if it is proper to bleed a man attacked with imminent suffocation, or if it would be better to vomit him, or apply an irritating foot-bath? You see that the question of opportunity or inopportunity of the aid of medicine can be properly resolved only by him who is in possession of medical science.

SECOND OBJECTION.

It is insisted, that if the practitioner is really more apt than any one else of judging the cases in which science should interfere, he has often an interest opposed to that of the patient, and it is to be feared at least, that in this conjuncture his zeal may be somewhat abated.

REPLY.

It can not be denied that, in the present state of society, the interest of the physician is not unfrequently in opposition to that of his patient, especially when the latter is very rich. But this is no longer a question of science, but one of probity and of social organization; it is for the legislator to devise the means to harmonize these two opposite interests, to arrange them in such a manner that both shall concur to the same end—the prompt cure of the patient. In the meantime, the wisest part consists in making choice of an honorable as well as a skillful physician; to inquire into the morality of the man to whom is confided the care of health and life, with as much solicitude as we inquire into the morality of the notary or advocate to whom we commit the charge of our fortunes. We must not hesitate on any occasion to prefer a practitioner of limited knowledge but known probity, to one of high scientific renown but of suspected morality; for if the case is difficult or doubtful, the first will not hesitate to ask for a consultation with a more skillful colleague than himself, and the patient will thus have the advantage of probity directed by science. Fortunate is the patient who encounters these two qualities united in the same physician; the best plan, then, is to abandon himself with confidence to the counsels of such a director; he has put his life and his health under the most favorable chances, as far as the limited wisdom of man can determine.

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